ioLogik E2242 User's Manual

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ioLogik E2242 User's Manual

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1 Introduction

The ioLogik E2242 is a stand-alone Active Ethernet I/O product with 4 analog inputs and 12 configurable DIOs. The DIN-Rail mountable E2242 allows users to connect to both digital and analog inputs, and connects digital outputs to switches, buzzers, and alarm lights, over Ethernet and IP-based networks.

The following topics are covered in this chapter:

- **Overview**
  - Traditional Remote I/O
  - Active Ethernet I/O
  - Click&Go
  - Optional Liquid Crystal Display Module (LCM)
- **Product Features**
- **Package List**
- **Product Specifications**
- **Physical Dimensions (Unit = mm)**
- **Hardware Reference**
  - Panel Guide
  - Pin Assignments
  - LED Indicators

Overview

The ioLogik E2242 is a member of the E2000 line of ioLogik Active Ethernet I/O products, which are designed for intelligent, pro-active status reporting of attached sensors, transmitters, and transducers, over a network. The E2242 comes with 4 embedded analog inputs and 12 configurable DIOs of which the I/O combination is extremely flexible and suitable for various applications. The ioLogik E2242 also supports an optional hot-pluggable Liquid Crystal Module (LCM) for viewing and configuring device settings.

Traditional Remote I/O

Ethernet remote I/O solutions have been on the market for a long time. Traditional solutions are "passive" in the sense that I/O servers wait passively to be polled by a host computer. The response time in this type of setup, however, tends to be on the order of seconds. The "passive" remote I/O structure is simply inadequate for Data Acquisition and Control (DAC) systems that require an efficient, real-time I/O solution with a response time on the order of hundredths of seconds.

Active Ethernet I/O

Moxa's **Active Ethernet I/O** line was developed specifically to address the limitations of the traditional passive approach. Rather than having the host computer poll the I/O device server over the network for the status of each I/O device, the **Active Ethernet I/O server** intelligently sends the host computer status information only under specified conditions. This is a **report by exception** approach, which greatly reduces the load on CPU and network resources. Network packets are far fewer in number and far smaller in size, since I/O information is only sent when necessary, and only information from the specified I/O device is sent. Based on field tests of an ioLogik E2000 series server used in an RFID system, 50 ms is the typical response time over a 100 Mbps Ethernet network. Moxa's active I/O messaging system uses TCP or UDP for I/O messaging and supports sending messages to up to ten host computers simultaneously.

In addition to providing intelligent status reporting, Active Ethernet I/O servers are backwards compatible, with all of the functions and capabilities of traditional passive remote I/O servers.

Click&Go

Moxa developed the Click&Go logic control interface for easy configuration and deployment of Active Ethernet I/O. Click&Go's intuitive, graphical interface lets administrators use simple IF/THEN statements as rules to determine how the Active Ethernet I/O server responds to different I/O conditions. For example, the Active Ethernet I/O server could be set to turn on an attached switch as well as send an e-mail or SNMP trap when an attached event counter reaches a certain value. Click&Go makes it easy to define a set of these rules, which will become the basis for your Active Ethernet I/O system.

Optional Liquid Crystal Display Module (LCM)

The ioLogik E2000 series supports an optional hot-pluggable Liquid Crystal Module (LCM) for field management and configuration. The LCM can display network and I/O settings such as digital input mode and value. The ioLogik E2000 series' IP address and netmask can also be configured using the LCM, and one LCM can be used to maintain and configure multiple ioLogik products.

Product Features

Analog input

The ioLogik E2242 supports both currents and voltage as analog inputs, connecting various kinds of sensors with a 16-bit high resolution and 100 samples/second (all channels) sampling rate.

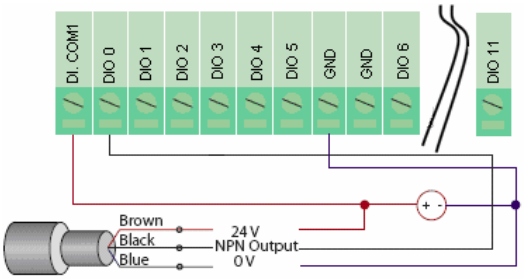
Configurable I/O channels

The ioLogik E2242 provides the flexibility to handle almost any field installation with 12 configurable input/output channels. This enables you to define any custom configurations such as 6 inputs and 6 outputs, 8 inputs and 4 outputs, or 10 inputs and 2 outputs.

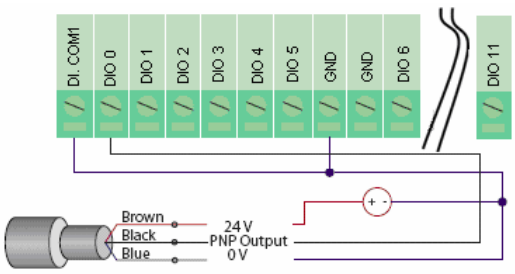
Digital inputs

The ioLogik E2242 supports dry contact, PNP, and NPN sensors. The sensor type is determined by your wiring approach. Sensors can be wired in two different groups, so both PNP and NPN sensors can be connected to the unit at the same time.

Wet Contact with NPN sensor



Wet Contact with PNP sensor



Patented Click&Go logic for easy local control without programming

Moxa's Click&Go logic is used with Active Ethernet I/O products to make it easy to define a set of rules for local control of attached output devices. For example, you can define a rule that activates an attached switch and sends an e-mail when a sensor event occurs a certain number of times.

Instant event reporting by TCP, UDP, e-mail, or SNMP trap

Active Ethernet I/O products can report I/O events automatically to any network host. Reports are fully customizable and can be sent by TCP, UDP, e-mail, or SNMP trap.

Peer-to-peer I/O for transmission of sensor signals over Ethernet without controller

The ioLogik E2000 series supports Peer-to-Peer I/O operation, where sensor signals are transmitted over Ethernet to another ioLogik E2000 series device. For typical 100 Mbps LANs, latency is only 100 ms.

Power fail counter storage memory

The ioLogik E2242 can store event counter values for digital inputs. Moreover, these values will not be lost during a power failure or after disconnection.

New internal register and timer functions

Two new Click&Go functions have been added to the ioLogik E2242. The internal register not only allows the user to redirect the result of the previous logic to the current one, but also to control I/O remotely via Modbus/TCP from SCADA software when Click&Go is still running. The timer allows users to perform such tasks as setting a period of delay for Click&Go.

RoHS compliance

As required by EU regulations, the ioLogik E2242 is fully RoHS-compliant.

Package List

The ioLogik E2242 is shipped with the following items:

Standard Accessories

- ioLogik E2242
- Document and Software CD

Optional Accessories

- LDP1602 ioLogik LCM (Liquid Crystal Display Module)

NOTE: Notify your sales representative if any of the above items are missing or damaged.

Product Specifications

LAN	
Interface	10/100BaseTx with MDI/MDIX, RJ45
Protocols	Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, SNMP(MIB for I/O and Network), HTTP, SNTP
Protection	1.5KV magnetic isolation
IP Address	Fixed, dynamic (DHCP) Default: 192.168.127.254
Serial	
Interface	RS-485 (2 wire): Data+, Data-, GND
Serial Line Protection	15 KV ESD for all signals
Serial Communication Parameters	
Parity	None
Data Bits	8

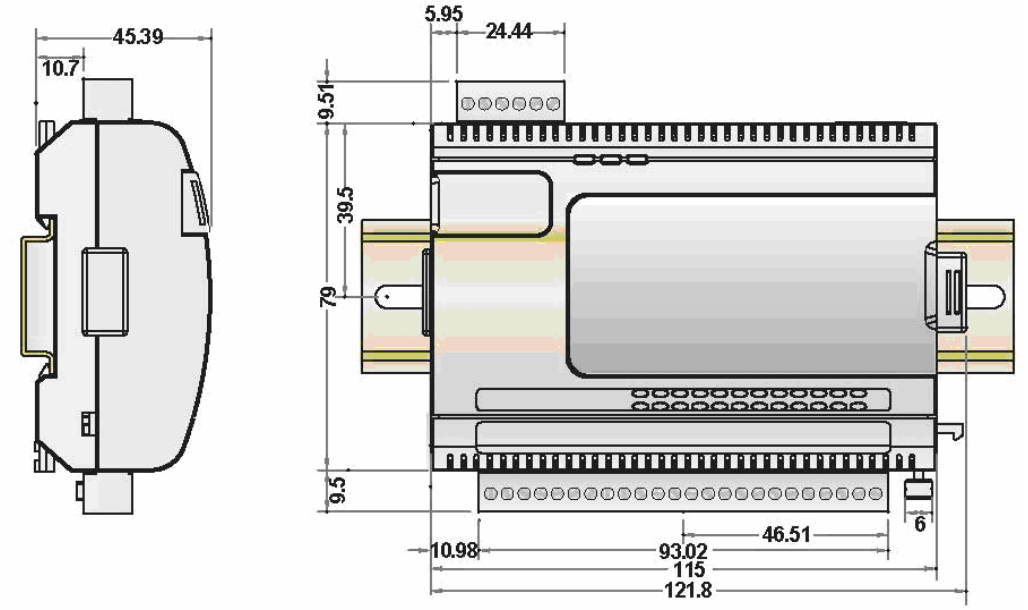
Stop Bits	1
Flow Control	None
Speed	1200 to 115200 bps
Protocol	Modbus/RTU
Analog Input	
Inputs	8, differential
Resolution	16-bit
Input Range	+/-150 mV, 0 to 150mV, +/-500 mV, 0 to 500 mV, +/-5 V, 0 to 5V, +/-10 V, 0 to 10V, 0 to 20 mA, 4 to 20 mA
Data Format	16-bit integer
Accuracy	+/- 0.1%, FSR @ 25ºC, +/- 0.3%, FSR @ -10, 60ºC
Sampling Rate	All channels: 100 samples/sec
Input Impedance	200 kΩ
Built-in Resistor for Current Input	102 Ω
Optical Isolation	3000 VDC / 2000 Vrms
Digital Input	
Inputs	12 fixed channels, two 6-channel groups for sink/source type
I/O Mode	DI or event counter (up to 900 Hz)
DI COM Power Input	24 VDC nominal, up to 36 VDC
Dry Contact	Logic 0: short to GND Logic 1:open
Wet Contact	Logic 0: 0 to 3 VDC Logic 1: 3.5 to 30 VDC(DI COM to DI)
Common Type	6 points for each COM
Isolation	3000 VDC / 2000 Vrms
Protection	Over voltage protection: +36 VDC
Counter Power Off Storage	Yes
Digital Output	
Inputs	12 points sink type
I/O Mode	DO or pulse output (up to 1000 Hz)
DO Power	Input 24 VDC nominal, up to 30V
Output Current Rating	Max. 200 mA per channel
Magnetic Isolation	3000 VDC / 2000 Vrms
Protection	Over voltage protection: +36 VDC Over current limit: 600 mA (typical) Over temperature shutdown: 160°C (min.)
Configurable DI/DO Channels	
Channels	12
I/O mode	DI or event counter (up to 900 Hz) DO or pulse output (up to 1000 Hz)
Magnetic Isolation	3000 VDC/ 2000 Vrms
Environmental	
Operation Temperature	-10 to 60°C (14 to 140°F), 5 to 95% RH
Storage Temperature	-40 to 85°C (-40 to 185°F), 50 to 95% RH
Wiring	
I/O Cable	Max. 14 AWG
Certificaitons	Shock, Freefall, Vibration, CE Class A, Level 3, FCC Part 15, CISPR (EN55022) Class A EC 61000-6-2, EC 61000-6-4

Accessories

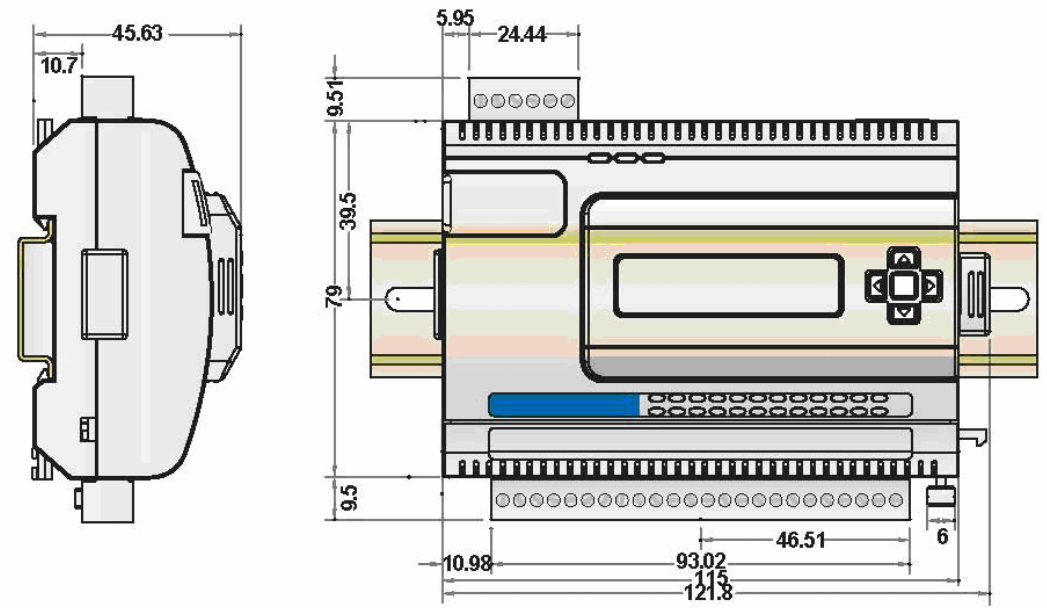
LCM	Hot-pluggable attachment for IP display, DI/DO status 16x2 character display Backlit screen 5 buttons

Physical Dimensions (Unit = mm)

Without LCM

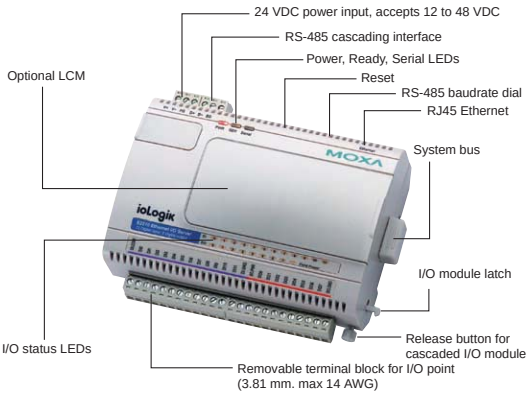


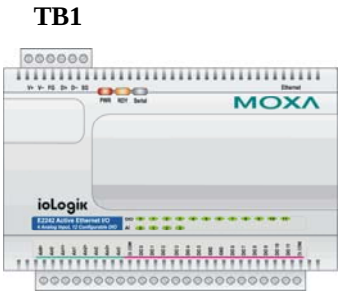
With LCM



Hardware Reference

Panel Guide

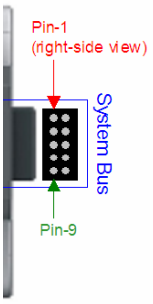




NOTE: The reset button restarts the server and resets all settings to factory defaults. Use a pointed object such as a straightened paper clip to hold the reset button down for 5 sec. The RDY LED will turn red as you are holding the reset button down. The factory defaults will be loaded once the RDY LED turns green again. At this point you can release the reset button.

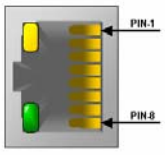
Pin Assignments

System Bus



Pin	1	2	3	4	5
Signal	V+	V-	V+	V-	NC
Pin	6	7	8	9	10
Signal	NC	Data+	SYNC	Data-	GND

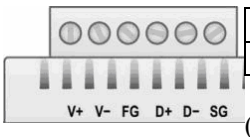
Ethernet Port



Pin	1	2	3	4
Signal	TXD^+	TXD^-	RXD^+	X

Pin	5	6	7	8
Signal	X	RXD^-	X	X

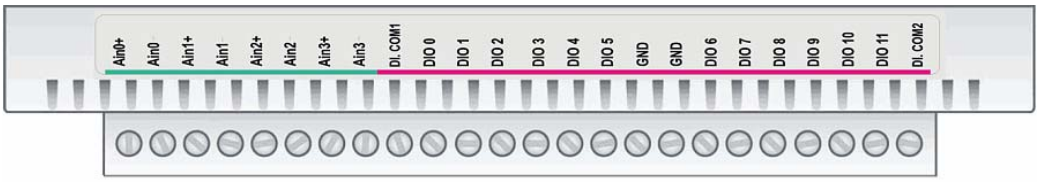
TB1 (Power Input & RS-485 Connector)



Pin	1	2	3	4	5	6
Signal	V+	V-	FG	D+	D-	SG

(V+: 12 to 48V)

TB2 (Digital Input and Output Terminal)



Pin	1	2	3	4	5	6	7	8	9
Signal	AIn 0+	AIn 0-	AIn 1+	AIn 1-	AIn 2+	AIn 2-	AIn 3+	AIn 3-	DI. COM1

Pin	10	11	12	13	14	15	16	17	18
Signal	DIO 0	DIO 1	DIO 2	DIO 3	DIO 4	DIO 5	GND	GND	DIO 6

Pin	19	20	21	22	23	24
Signal	DIO 7	DIO 8	DIO 9	DIO 10	DIO 11	DI. COM2

LED Indicators

Ethernet		
Ethernet	Orange	Live 10Mbps Ethernet connection
	Green	Live 100Mbps Ethernet connection
	Flashing	Transmitting or receiving data
System LEDs		
PWR	Red	Power is on
Ready	Red	System error
	Green	(steady) ioLogik E2242 is functioning normally (flashing) Click&Go logic is active
	Green & red	(flashing) ioLogik E2242 is in Safe Status
Serial	(flashing)	Serial port is receiving or transmitting data
I/O LEDs		
AI x 4	Green	Voltage or 0-20 mA measurement is selected
	Off	4-20 mA measurement is selected
DIO x 4	Green	Operating as DI channel, status is ON
	Orange	Operating as DO channel, status is ON
	Off	Status is OFF

2
Initial Setup

This chapter describes how to install the ioLogik E2242.

The following topics are covered in this chapter:

- **Hardware Installation**
  - Connecting the Power
  - Grounding the Unit
  - Connecting to the Network
  - Adding More I/O Channels
  - Setting the RS-485 Baudrate
  - Connecting the I/O Device
- **Software Installation**

Hardware Installation

Connecting the Power

Connect the 12 to 48 VDC power line to the ioLogik's terminal block (TB1). If power is properly supplied, the power LED will glow a solid red color until the system is ready

ATTENTION

Disconnect the power before installing and wiring!
Disconnect the power cord before installing and/or wiring your ioLogik.

Do not exceed the maximum current for the wiring!
Determine the maximum possible current for each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size.
If the current exceeds the maximum rating, the wiring could overheat, causing serious damage to your equipment.

Grounding the Unit

The ioLogik is equipped with two grounding points, one on the wall mount socket and the other on the DIN-rail mount. Both grounding points are connected to the same conducting pathway.

Connecting to the Network

1. Connect the ioLogik to the host PC with an Ethernet cable. For initial configuration, it is recommended that the ioLogik E2242 to be configured using a direct connection to a host computer rather than remotely over the Internet.
2. Set the host PC's IP address to 192.168.127.xxx. (xxx: from 001 to 253). In Windows, you can adjust this setting through the Control Panel.

Default IP Address	Default Netmask	Default Gateway
192.168.127.254	255.255.255.0	None

3. Use ioAdmin or the web console to detect the ioLogik. Once the ioLogik has been detected, modify the settings as needed for your network environment, then restart the server.

Adding More I/O Channels

A cost effective way to add more I/O channels to your ioLogik is to attach an appropriate ioLogik R2000 series I/O. The 2 ioLogiks can be snapped together using the RS-485 System Bus connector, as shown in the following figure. For the ioLogik E2000 series, additional digital I/O channels are added using the ioLogik R2110. Additional analog channels are added using the ioLogik R2140.

ATTENTION

Multiple ioLogik E2000/R2000 units can be snapped together as part of the same RS-485 system, but when connecting the power, be sure to use the following steps, in the order shown here:

1. Remove the first ioLogik's TB1 terminal block.
2. Snap all ioLogik units together, with the system bus on the side panel.
3. Install the first ioLogik's TB1 terminal block.
4. Turn on the system power.

ATTENTION

A total of 31 additional ioLogik R2000 products can be attached to one ioLogik E2000. The best space-saving arrangement is to use TB1 terminal block for the cascaded RS-485 connections, instead of using the system bus.

ATTENTION

All I/O channels of the ioLogik E2000+R2000 system can be polled by a remote host PC, but the Click&Go logic on can only be used on the ioLogik E2000. Click&go local logic control is currently not supported by R2000 products.

ATTENTION

When using the RS-485 cascading interface or System Bus to expand more I/O channels or to connect to RS-485 Modbus devices, the ioLogik E2000 will have an RS-485 Unit ID of 1. The ID of the attached ioLogik R2000 or other devices should always have a Unit ID of 2 or greater, with an upper limit of 99. Although ioLogik E2000 series allow the attached Modbus devices to have the ID up to 247, the maximal ID on the ioLogik R2000 is limited to 99..

Setting the RS-485 Baudrate

The RS-485 port on the ioLogik E2000 series is reserved to connect to another RS-485 I/O device. The RS-485 port can run Modbus/RTU or I/O command sets. The baudrate is set by a physical dial on the back of the ioLogik. The default settings are baudrate = 115200, parity check = N, data bits = 8, and stop bit = 1.

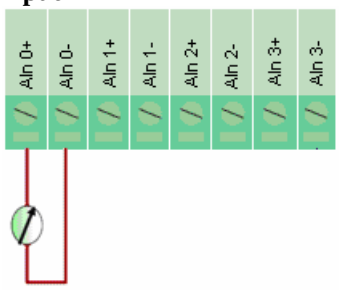
	Baudrate for RS-485 (parameters are N, 8, 1)	Dial setting and corresponding baudrate: 0:115200 1:57600 2:38400 3:19200 4:9600 5:4800 6:2400 7:1200

Remember to restart the ioLogik E2242 after making any changes to the RS-485 baud rate.

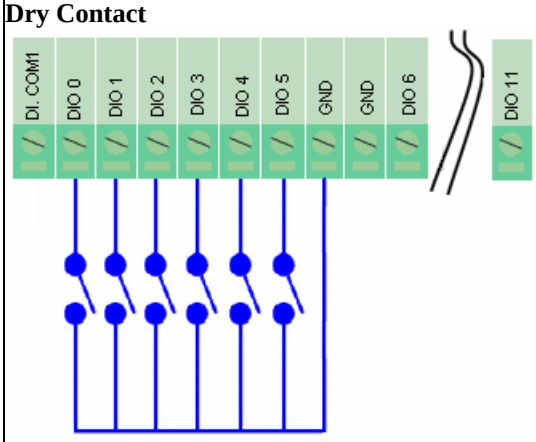
Connecting the I/O Device

With 4 channels of analog inputs and 12 configurable DIOs, the ioLogik E2242 offers great flexibility for connecting I/O devices. Also, unlike traditional Ethernet I/O products, the ioLogik E2242 can connect to analog sensors, dry contact, PNP, and NPN sensors at the same time. The sensor type determines your wiring approach, as shown in the following examples:

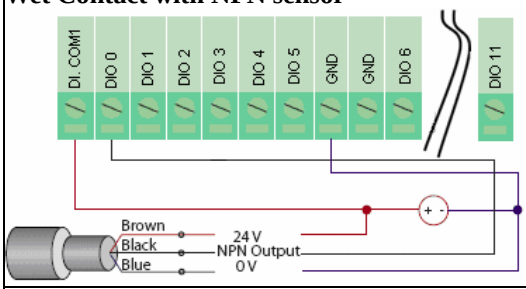
Analog Input



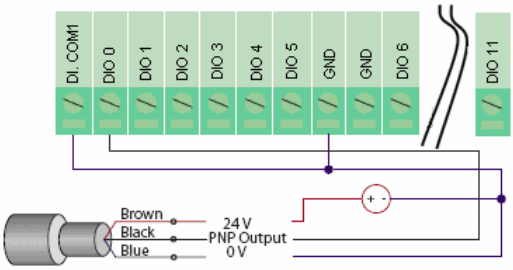
Dry Contact



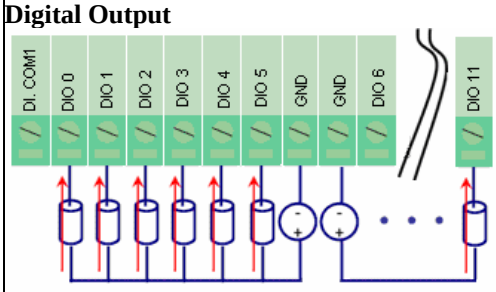
Wet Contact with NPN sensor



Wet Contact with PNP sensor



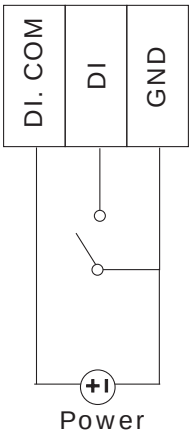
Digital Output



ATTENTION

When connecting the I/O device to the ioLogik's dry contacts, we strongly recommended connecting DI.Com to the power of the external sensor to avoid affecting other channels. DI.Com input power should be limited at 12 to 36 VDC.

DI Dry Contact



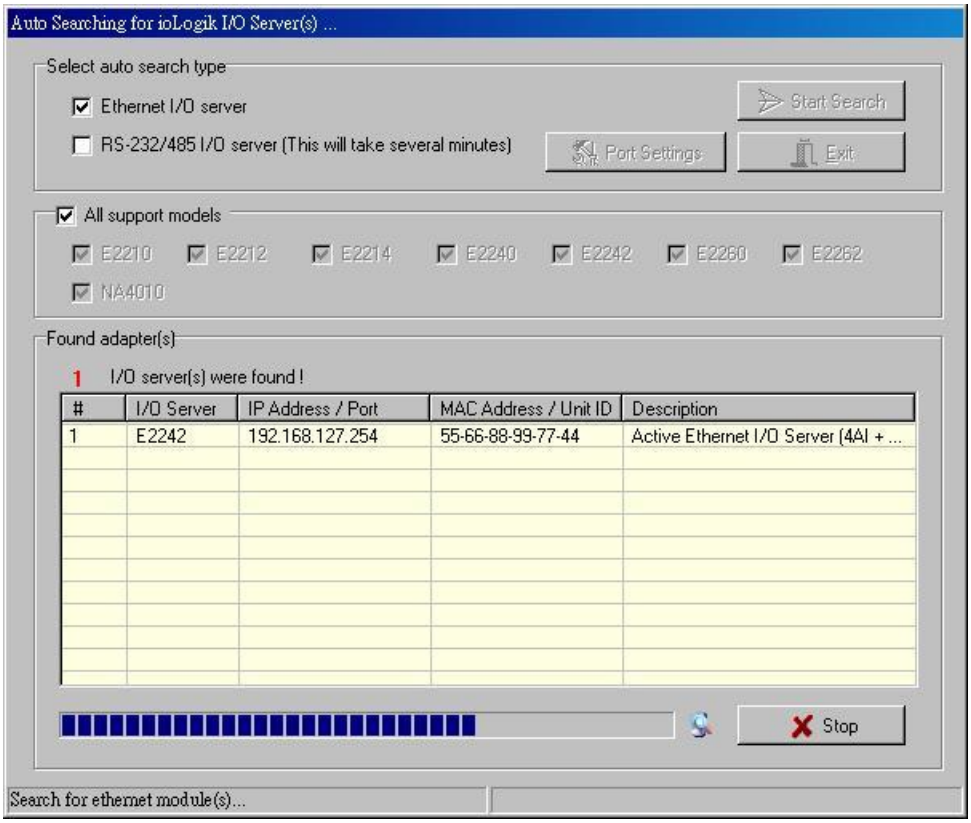
ATTENTION

Sensor types are set in groups, with DIO-0 to DIO-5 forming one group and DIO-6- to DIO-11 forming another group. If an NPN sensor is connected to DI-0, then only NPN sensors can be connected to the other DI channels in the group (i.e., DIO-4 and DIO-5). Likewise, if a PNP sensor is connected to DIO-6, then only PNP sensors can be connected to the other DI channels in the group (i.e., DIO-10 and DIO-11).

Software Installation

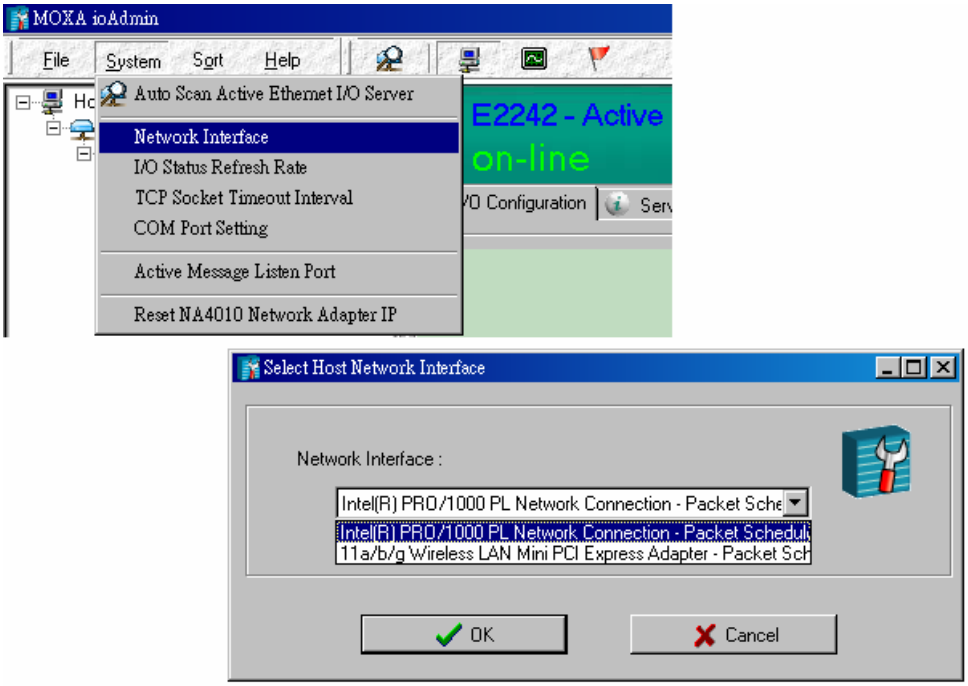
ioAdmin is a Windows utility provided for the configuration and management of ioLogik E2000 products and attached I/O devices. ioAdmin can be used from anywhere on the network to monitor and configure ioLogik E2000 products. You can also configure some of the settings through the web console or optional LCM.

1. **Installation from CD**: Insert the Document and Software CD into the host computer. In the Software\ioAdmin directory of the CD, locate and run SETUP.EXE. The installation program will guide you through the installation process and install the ioAdmin utility. You can also install the MXIO DLL library or ioEventLog separately.
2. **Open ioAdmin**: After installation is finished, run ioAdmin from the Windows Start menu: **Start →Program Files →MOXA →IO Server →Utility →ioAdmin.**
3. **Search the network for ioLogik**: When ioAdmin is started, it will automatically run the auto search program. Or find it on the menu bar, select **System →Auto Scan Active Ethernet I/O**. A dialog window will appear. Click **Start Search** to begin searching for your unit.



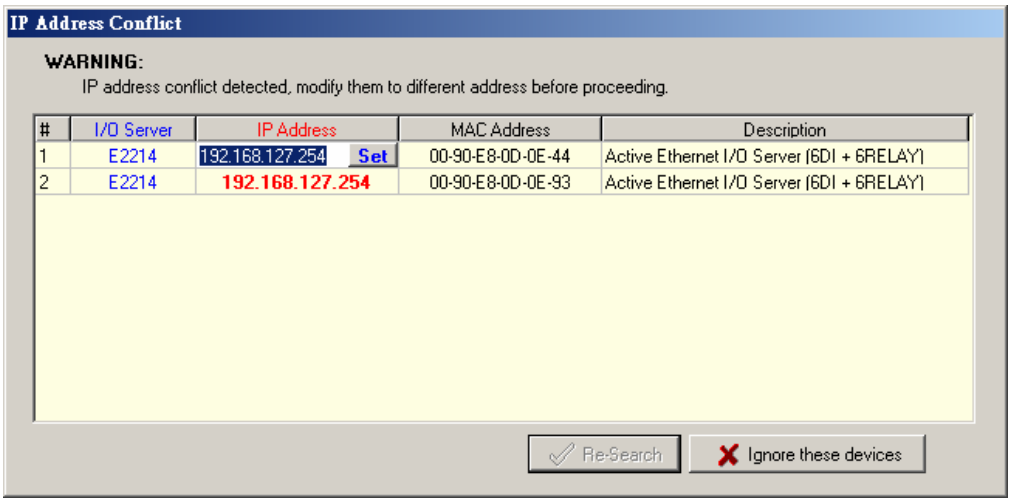
NOTE: The best approach to set up a previously configured ioLogik is to reset it to the factory default using the reset button (see Chap.1). You can then use ioAdmin to configure the ioLogik.

NOTE: If there are multiple network interfaces in the host computers, be sure to select the correct one before searching.

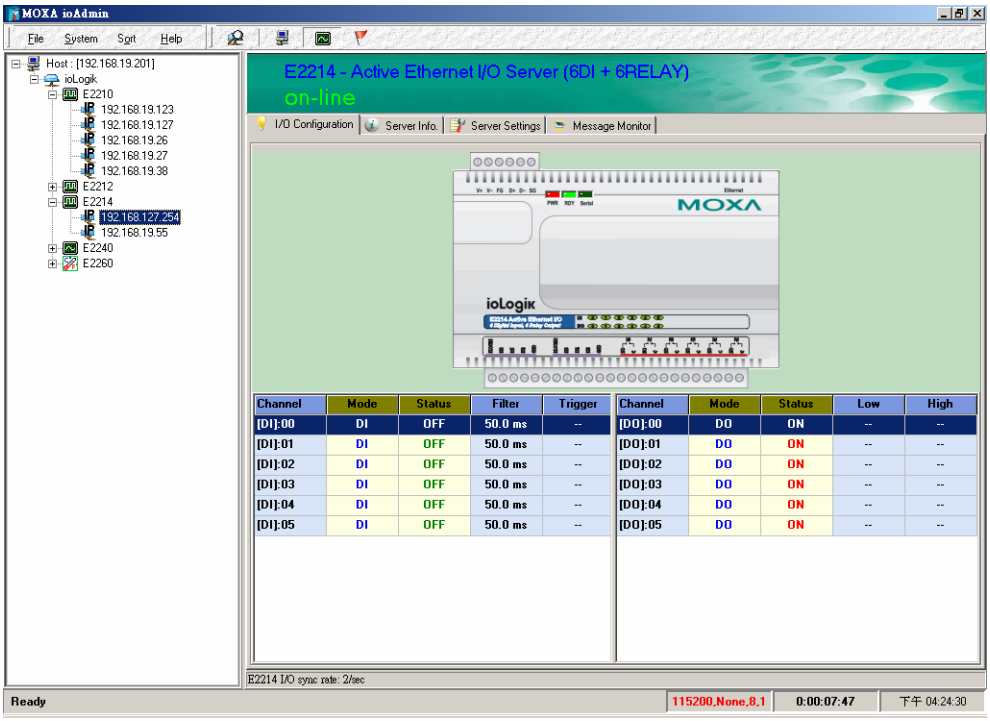


Connecting Multiple ioLogik E2000 Units

If multiple ioLogik E2000 units are installed on the same network, remember that each unit has the same default IP address. You will need to assign a different IP address to each unit to avoid IP conflicts. ioAdmin automatically detects IP conflicts and gives you a chance to modify each unit's IP address in the "IP Address" columns. Click the "Set" button to reboot the corresponding unit with its new IP address. Click the "Re-Search" button to refresh the list of units found by ioAdmin.


IP Address Conflict
WARNING:
IP address conflict detected, modify them to different address before proceeding.
I/O Server IP Address MAC Address Description
1 E2214 192.168.127.254 Set 00-90-E8-0D-0E-44 Active Ethernet I/O Server (6DI + 6RELAY)
2 E2214 192.168.127.254 00-90-E8-0D-0E-93 Active Ethernet I/O Server (6DI + 6RELAY)
Re-Search
Ignore these devices

4. **Monitoring I/O status**: Once your unit has been found by ioAdmin, you can view the status of all attached I/O devices on ioAdmin's main screen.



You can now use ioAdmin to setup or configure your unit. Please refer to Chapter 3 for additional information on using ioAdmin.

3
Using ioAdmin

In this chapter, we explain how to use ioAdmin to configure your ioLogik product.

The following topics are covered in this chapter:

- **Introduction to ioAdmin**
- **Features of ioAdmin**
- **ioAdmin Main Screen**
  - Main Screen Overview
  - Wiring Guide
- **Menu Items**
- **Main Window**
- **ioAdmin Administrator Functions**
  - I/O Configuration Tab (Administrator)
  - Server Settings Tab (Administrator)
  - Network Tab
  - Firmware Update Tab
  - Watchdog Tab
  - Click&Go Logic Tab
- **Server Context Menu**
- **Using TFTP to Import/Export Configuration**
- **Using ioEventLog**

Introduction to ioAdmin

ioLogik Ethernet I/O can be managed and configured over the Ethernet with ioAdmin, a Windows utility provided with your ioLogik. ioAdmin's graphical-user interface gives you easy access to all status information and settings.

The ioLogik E2000 series also supports configuration by web console and by optional LCM, but full configuration and management is only available through the ioAdmin utility.

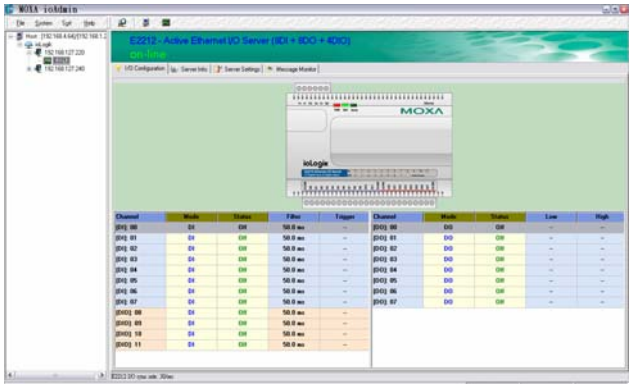
A new feature in ioAdmin automatically detects IP conflicts between ioLogik E2000 units. If ioAdmin detects an IP conflict, a window will appear that allows you to resolve the IP conflict immediately and restart each unit. ioAdmin can also be used to configure Click&go local logic control to control your ioLogik system.

Features of ioAdmin

Remote management

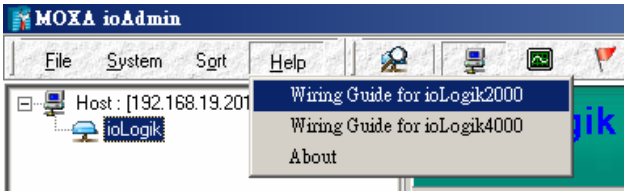
Over the Ethernet network, ioAdmin allows users to

- Search and configure multiple ioLogiks.
- Perform I/O status monitoring and control
- Use active message monitoring
- Use Click&Go local logic control configuration
- Use the firmware upgrade interface
- Restart the ioLogik
- Reset to factory defaults



On-line Wiring Guide

A wiring guide can be opened from within ioAdmin for your convenience. The easily accessible wiring guide can save administrators much time while planning or troubleshooting.



Configuration File

ioAdmin allows the entire configuration of the ioLogik E2000 series to be saved as a file. The file is viewable as text and can serve three purposes:

- As a record or backup of configuration.
- As a template for the configuration of other ioLogik E2000 series.
- As a quick reference guide for you to configure Modbus drivers in a SCADA system

The file includes the following information:

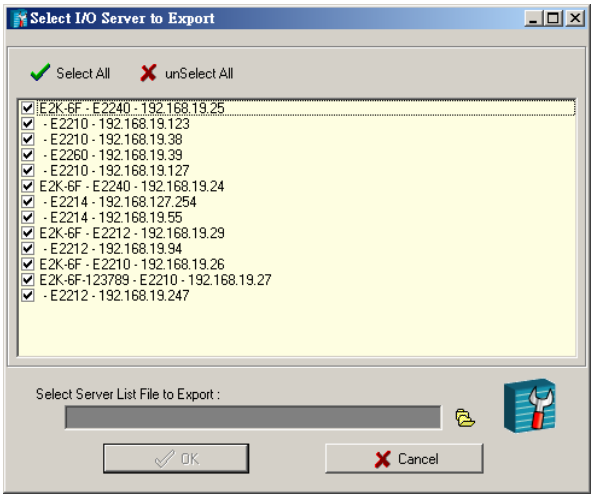
- File title, Date, and Time
- Model Information
- System Configuration
- Modbus Address

```
ioLogik E2214 Network I/O Server Configuration
==============================================
Date: 1970/01/-9525
Time: -2:-31:-2
Firmware: V1.0 Build08022212

[1. Model]
----------
MOD_TYPE=E2214 - Active Ethernet I/O Server (6DI + 6DO)
MOD_LOC=
MOD_NAME=

[2. I/O Configurations]
-----------------------
DI00=0,(DI),            DI00_FILTER=100,(150000.00ms)
DI01=0,(DI),            DI01_FILTER=100,(150000.00ms)
DI02=0,(DI),            DI02_FILTER=100,(150000.00ms)
DI03=0,(DI),            DI03_FILTER=100,(150000.00ms)
DI04=0,(DI),            DI04_FILTER=100,(150000.00ms)
DI05=0,(DI),            DI05_FILTER=100,(150000.00ms)

DO00=0,(DO),            DO00_PWN=1,(On),              DO00_PWSEQ=0,(Sec),
DO01=0,(DO),            DO01_PWN=1,(On),              DO01_PWSEQ=0,(Sec),
DO02=0,(DO),            DO02_PWN=1,(On),              DO02_PWSEQ=0,(Sec),
DO03=0,(DO),            DO03_PWN=1,(On),              DO03_PWSEQ=0,(Sec),
DO04=0,(DO),            DO04_PWN=1,(On),              DO04_PWSEQ=0,(Sec),
DO05=0,(DO),            DO05_PWN=1,(On),              DO05_PWSEQ=0,(Sec),

[3. Modbus address table]
-------------------------
CHANNEL         I/O TYPE        MODBUS REFERENCE        MODBUS ADDRESS (Dec, Hex)
DI00            Input           10001                   0000, 0x0000
DI01            Input           10002                   0001, 0x0001
DI02            Input           10003                   0002, 0x0002
DI03            Input           10004                   0003, 0x0003
DI04            Input           10005                   0004, 0x0004
DI05            Input           10006                   0005, 0x0005
```

Server Management List

ioAdmin can import and export a list of ioLogik that are being managed. This file can make it easier to manage all devices on the network, and includes the following information:

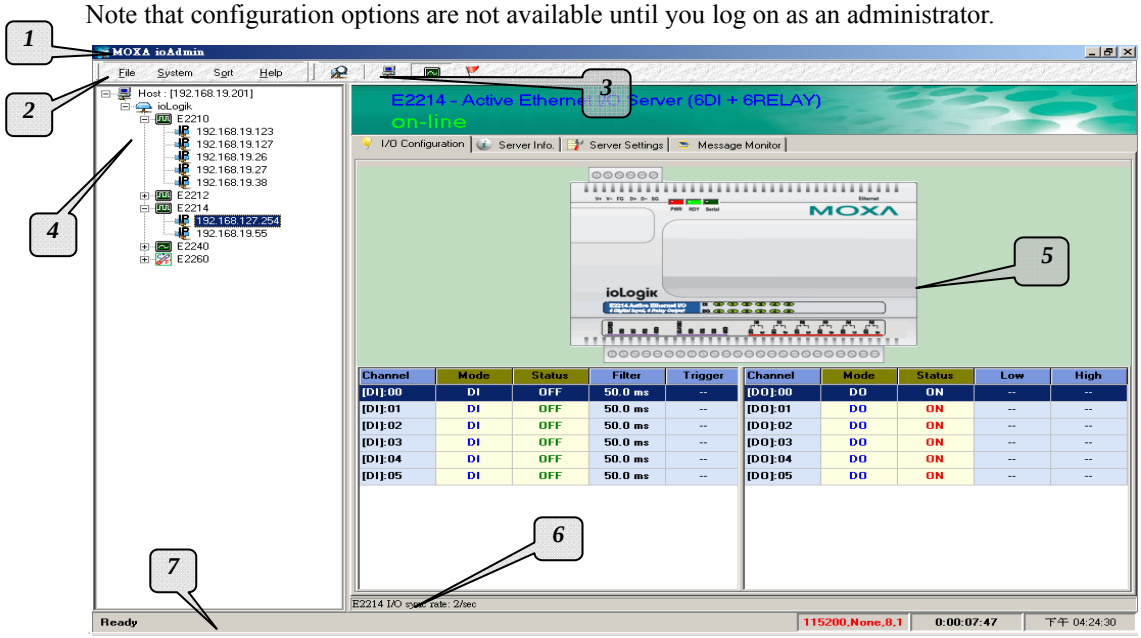
- Server name
- Module
- IP address
- Unit ID



ioAdmin Main Screen

Main Screen Overview

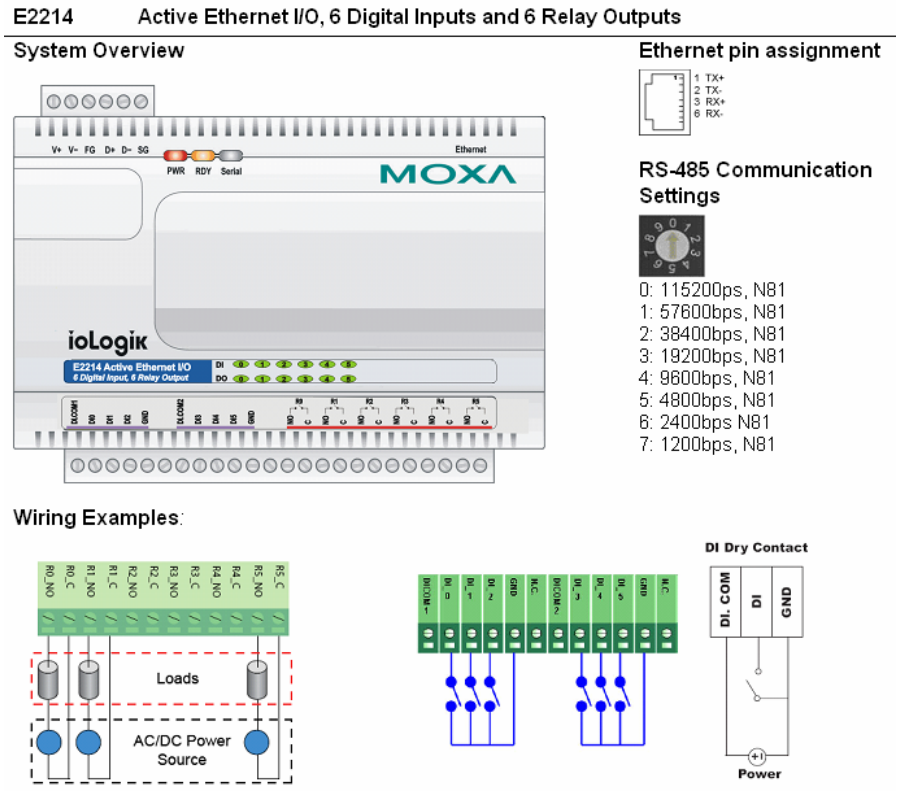
This is ioAdmin's main screen. The main window defaults to the I/O Configuration tab, which displays a figure of your unit with the status of every I/O channel. The other tabs in the main window take you to server and network settings, and further functions are available when you log on ioLogik. Note that configuration options are not available until you log on as an administrator.



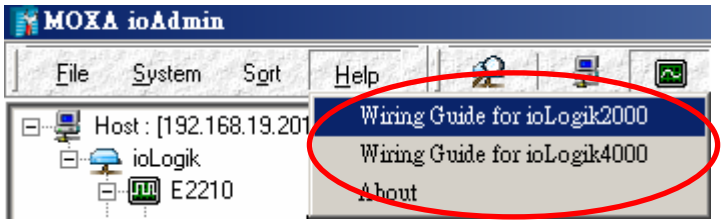
ioAdmin Main Screen	
1.	Title
2.	Menu bar
3.	Quick link
4.	Navigation panel
5.	Main window
6.	Sync. rate status
7.	Status bar

Wiring Guide

ioAdmin provides a wiring guide for the ioLogik E2000 series. You can access the wiring guide by right-clicking the ioLogik figure in the I/O Configuration tab. Select "Wiring Guide" in the submenu to open a help file showing the unit's wiring information and electrical characteristics.



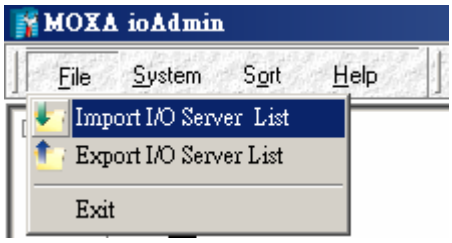
You can also access the On-line Wiring Guide through the Help menu on the menu bar.



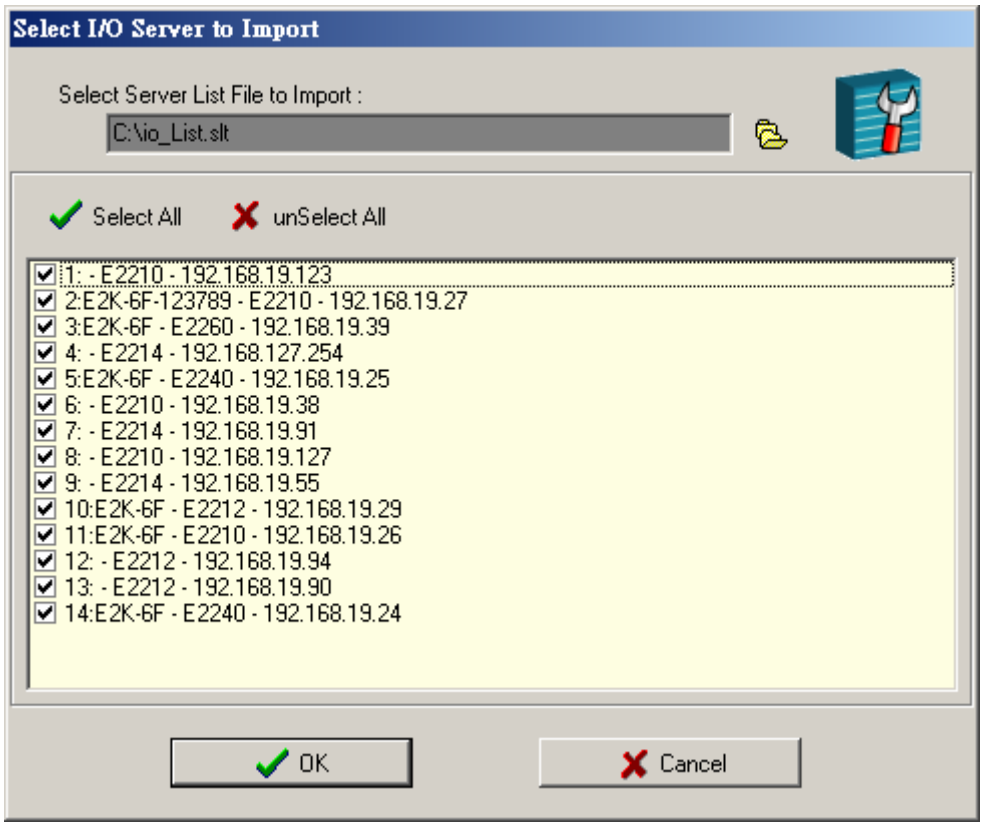
Menu Items

File

From the **File** menu, you can export the list of the ioLogik that are currently displayed in the navigation panel. You also can import a list into ioAdmin.



When importing a server list, you will be prompted to select which ioLogik on the list need to be imported.



The file will have an .SLT extension and can be opened as a text file. The server list will provide the following information for each server:

- Server name
- Model
- IP address
- Unit ID

System

Several operations can be accessed from the **System** menu.

Auto Scan Active Ethernet I/O Server searches for ioLogiks on the network. When connecting for the first time, or when recovering from a network disconnection, you can use this command to find any ioLogik that is connected to the physical network.

Network Interface allows you to select a network to use, if the PC has multiple network adaptors installed.

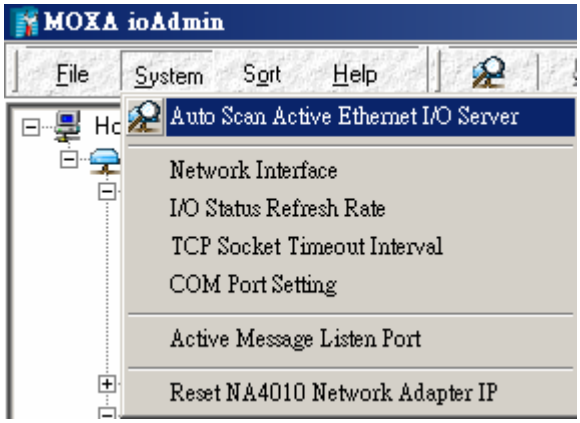
I/O Status Refresh Rate is used to adjust how often the ioLogik is polled for device status from ioAdmin utility. The current rate is displayed on the status bar at the bottom of the window. Note that higher sync rates result in higher loads on the network.

TCP Socket Timeout Interval allows you to select the preferred timeout value for TCP socket communication.

COM Port Setting is used to set the default parameters for ioAdmin utility to establish a Modbus connection, such as baudrate, data bits, and timeout interval. For most applications, this will involve connecting to ioLogik R-Series devices.

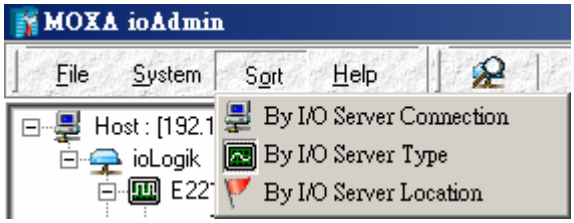
Active Message Listen Port specifies the port number to use for Active Messages. If your network uses a firewall, you can coordinate this setting with your firewall settings to ensure that active messages get through.

Reset NA4010 Network Adaptor IP is used to re-assign an IP address to the NA-4010 network as reported by the ioLogik E2000 series adaptor, for ioLogik 4000 systems.



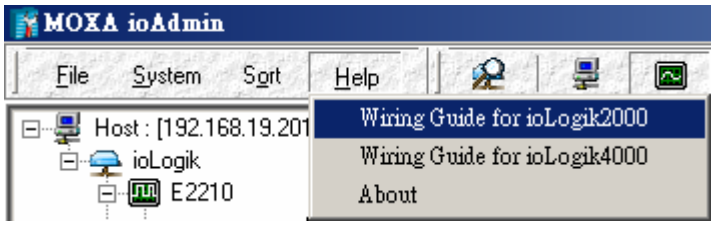
Sort

The **Sort** menu allows the server list in the navigation panel to be sorted by connection, model, and location.



Help

In the **Help** menu, you can view wiring guides and information about ioAdmin.



Quick Links

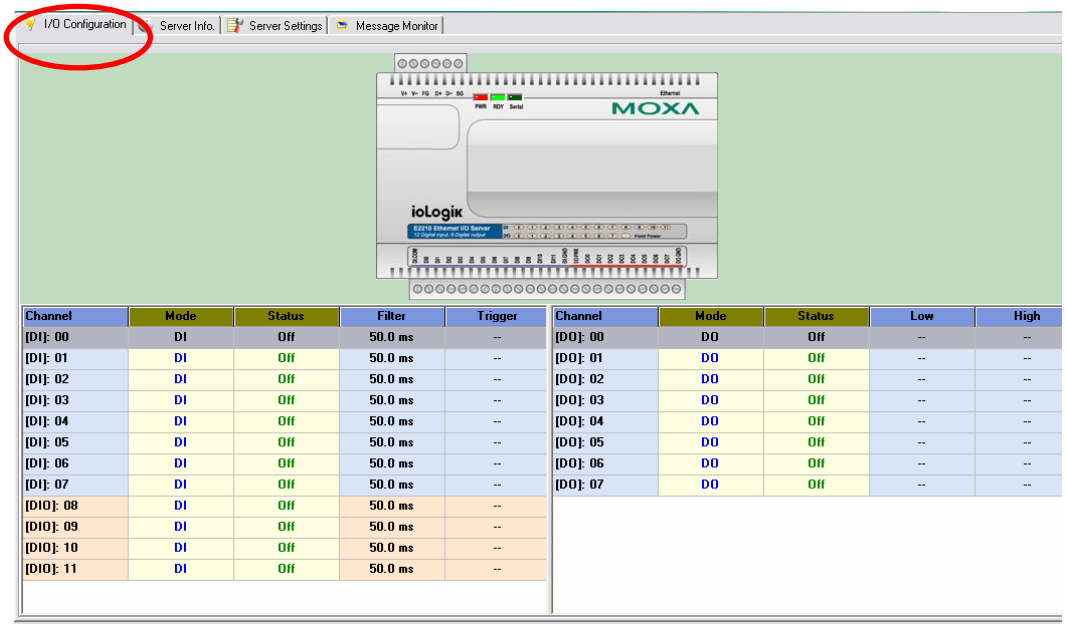
Quick links are provided to search for the ioLogik on the network and sort the server list.

	Search network for I/O servers
	Sort by connection
	Sort by I/O server type
	Sort by location

Main Window

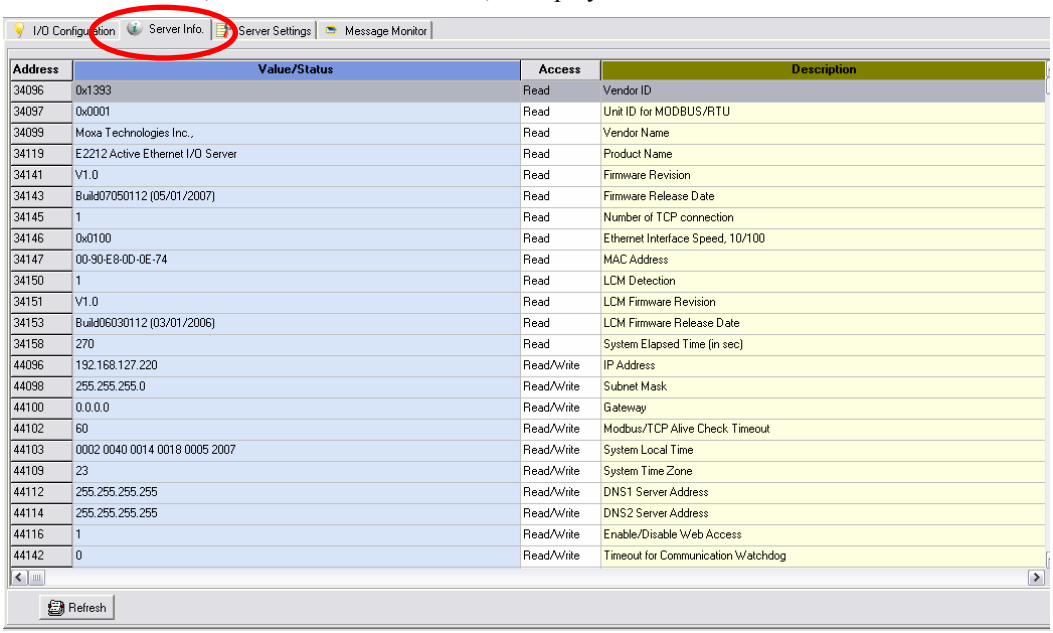
I/O Configuration Tab (General)

The **I/O Configuration** tab shows the status of every I/O channel. This is the default tab when you first open ioAdmin. Input channels are listed on the left and output channels are listed on the right.


I/O Configuration
Server Info.
Server Settings
Message Monitor
MOXA
ioLogik
Channel Mode Status Filter Trigger
[DI]: 00 DI Off 50.0 ms --
[DI]: 01 DI Off 50.0 ms --
[DI]: 02 DI Off 50.0 ms --
[DI]: 03 DI Off 50.0 ms --
[DI]: 04 DI Off 50.0 ms --
[DI]: 05 DI Off 50.0 ms --
[DI]: 06 DI Off 50.0 ms --
[DI]: 07 DI Off 50.0 ms --
[DIO]: 08 DI Off 50.0 ms --
[DIO]: 09 DI Off 50.0 ms --
[DIO]: 10 DI Off 50.0 ms --
[DIO]: 11 DI Off 50.0 ms --
Channel Mode Status Low High
[DO]: 00 DO Off -- --
[DO]: 01 DO Off -- --
[DO]: 02 DO Off -- --
[DO]: 03 DO Off -- --
[DO]: 04 DO Off -- --
[DO]: 05 DO Off -- --
[DO]: 06 DO Off -- --
[DO]: 07 DO Off -- --

Server Info Tab

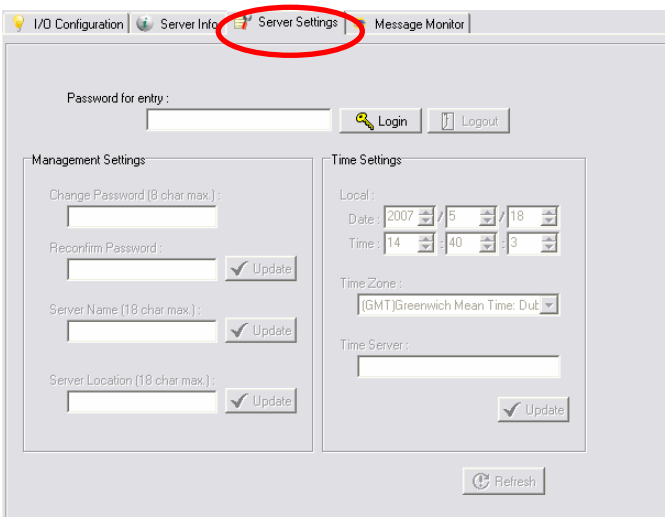
Server information, such as firmware version, is displayed in the **Server Info** tab.



Address	Value/Status	Access	Description
34096	0x1393	Read	Vendor ID
34097	0x0001	Read	Unit ID for MODBUS/RTU
34099	Moxa Technologies Inc.,	Read	Vendor Name
34119	E2212 Active Ethernet I/O Server	Read	Product Name
34141	V1.0	Read	Firmware Revision
34143	Build07050112 (05/01/2007)	Read	Firmware Release Date
34145	1	Read	Number of TCP connection
34146	0x0100	Read	Ethernet Interface Speed, 10/100
34147	00-90-E8-0D-0E-74	Read	MAC Address
34150	1	Read	LCM Detection
34151	V1.0	Read	LCM Firmware Revision
34153	Build06030112 (03/01/2006)	Read	LCM Firmware Release Date
34158	270	Read	System Elapsed Time (in sec)
44096	192.168.127.220	Read/Write	IP Address
44098	255.255.255.0	Read/Write	Subnet Mask
44100	0.0.0.0	Read/Write	Gateway
44102	60	Read/Write	Modbus/TCP Alive Check Timeout
44103	0002 0040 0014 0018 0005 2007	Read/Write	System Local Time
44109	23	Read/Write	System Time Zone
44112	255.255.255.255	Read/Write	DNS1 Server Address
44114	255.255.255.255	Read/Write	DNS2 Server Address
44116	1	Read/Write	Enable/Disable Web Access
44142	0	Read/Write	Timeout for Communication Watchdog

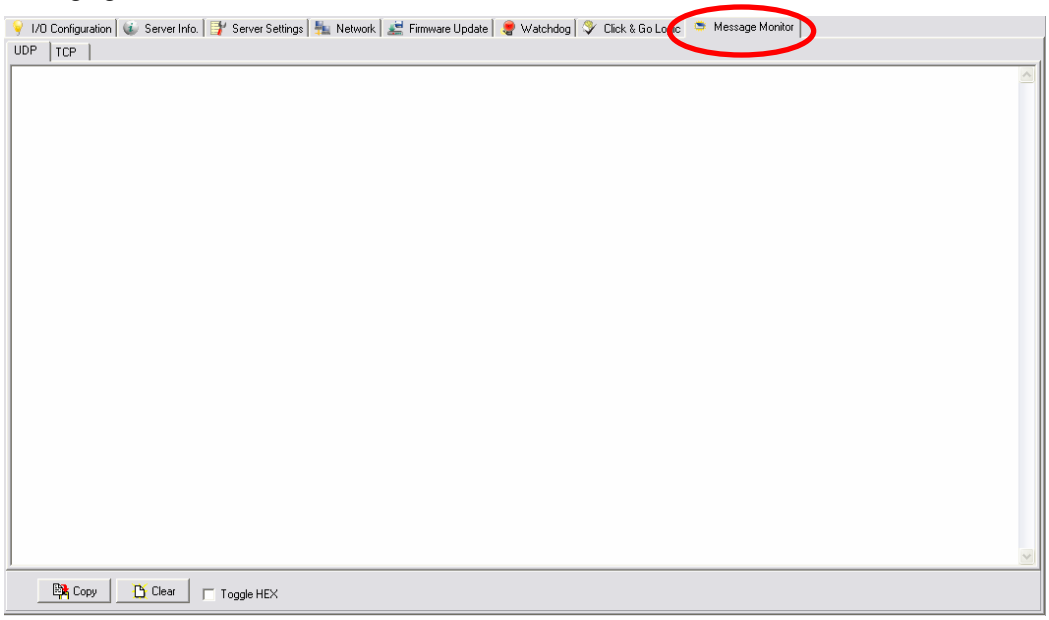
Server Settings Tab (General)

The **Server Settings** tab is where you log in as an ioAdmin administrator. This is required in order to gain access to the ioLogik configuration options. If no password has been set up, simply click **Login** and leave the **Password** for entry field blank. Please refer to the ioAdmin Administrator Functions section later on in this chapter for more detail.



Message Monitor Tab

The **Message Monitor** tab will display any TCP/UDP Active Messages reported by the ioLogik E2000 series. When you install the unit for the first time, the ruleset will not have been defined yet, so there will be no messages in the Message Monitor Tab. When a ruleset has been defined and activated, any TCP/UDP messages that have been triggered by sensor events will be shown in the Message Monitor tab. Please refer to Chapter 5 for information on how to define rules for active I/O messaging.



Messages can be displayed in ASCII or in HEX. To display messages in HEX, make sure that "Toggle HEX" is checked.

ioAdmin Administrator Functions

For full access to all configuration options, log in as an administrator in the Server Settings tab. This is required whenever you start up ioAdmin or boot up/restart the ioLogik. When you install the ioLogik for the first time, the password will be blank and you can simply click **Login**. Additional functions will available after logging in, including the following new tabs:

When making configuration changes, you will need to click **Update** or **Apply** to save the changes. Some changes will require that the unit be restarted in order to take effect.

ATTENTION

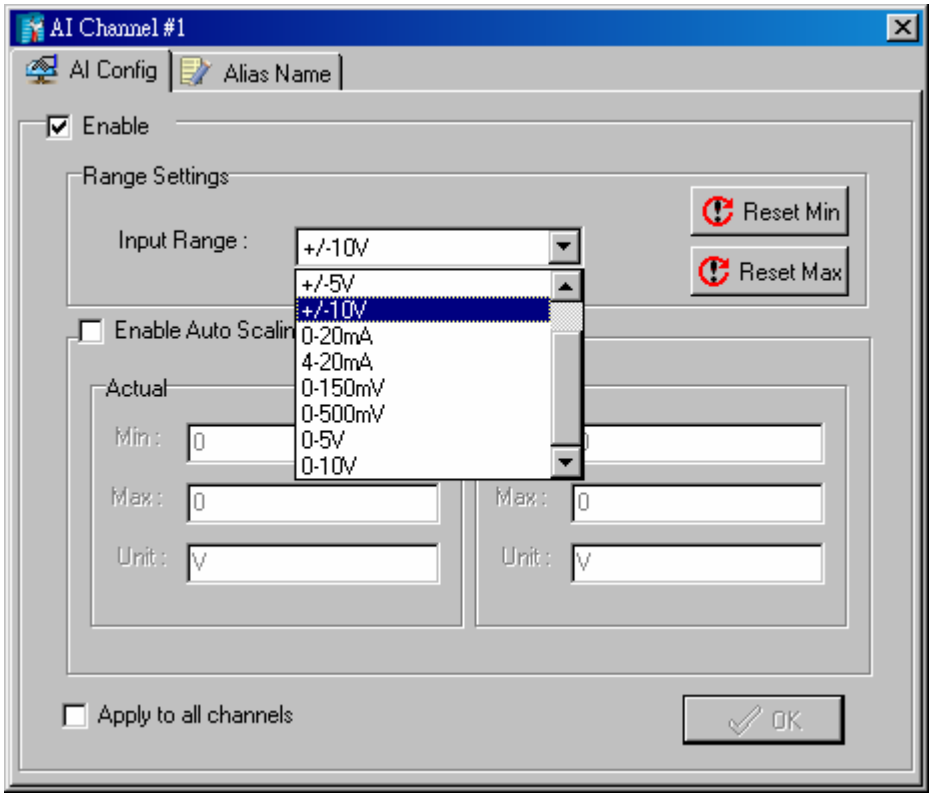
You MUST log in to access any administrator function, including Network, Communication Watchdog Timer, and Firmware Update tabs. If you forget the password, hold down the reset button to clear the password and load factory defaults. **This will result in the loss of all configuration settings and your Click&Go logic rules that have already been configured.**

I/O Configuration Tab (Administrator)

When logged in as an administrator, double click on a channel in the **I/O Configuration** tab to configure that channel's settings. A window will open with configuration options for that channel. After the channel has been configured as desired, click **Apply** to implement the new settings.

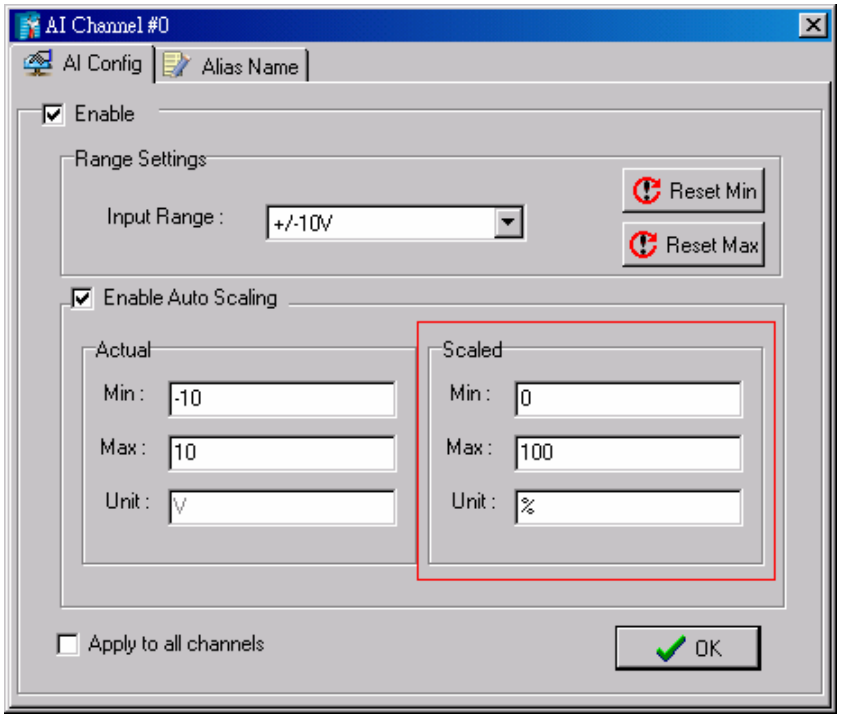
Configuring Analog Input Channels

The ioLogik E2242 is equipped with 4 AI (analog input) channels that can be set individually to +/-150 mV, 0 to 150mV, +/-500 mV, 0 to 500 mV, +/-5V, 0 to 5V, +/-10V, 0 to 10V, 0 to 20 mA, and 4 to 20 mA. You may also set all channels at once using the "Apply to all channels" check box.

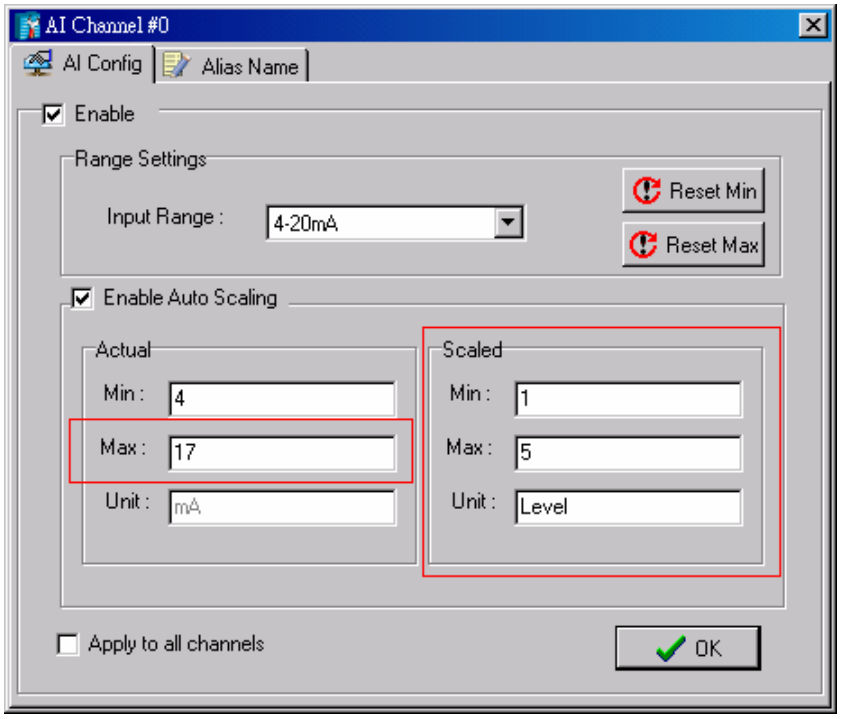


The sampling rate of analog inputs on the ioLogik E2242 is 100 samples/second for all channels. Users can disable the unused AI channel by un-checking the **Enable** check box to increase the sampling rate.

Enabling the Auto Scaling function will linearly convert the actual current or voltage value into other user defined units, such as percentage or ppm (parts per million).



Auto Scaling can also help to eliminate high or low end extremes. For example, if 17 mA represents a dangerous situation of high temperature, it will not be necessary to get a temperature that is even higher. In this case, users can cut off values beyond 17 mA and convert it to a proprietary level of danger, such as Level 5.

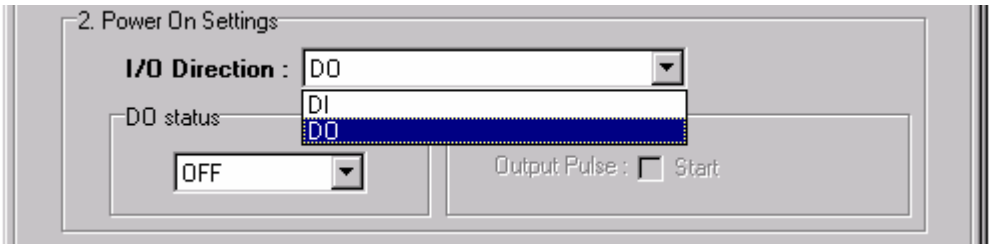


The **Reset Min** and **Reset Max** buttons will clear the minimum or maximum values recorded and displayed in the ioAdmin main window.

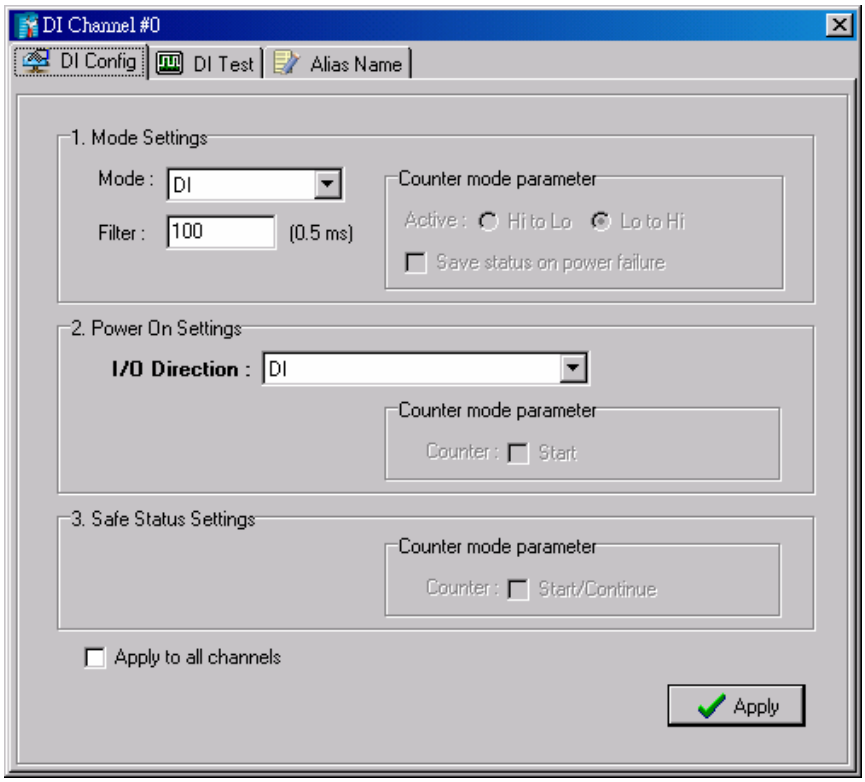
Channel#	Range	Value	Min.	Max.
[AI]:00	+/-10V	0.000 V	0.000 V	0.683 V
[AI]:01	+/-10V	0.000 V	0.000 V	0.672 V
[AI]:02	+/-10V	0.001 V	0.000 V	0.001 V
[AI]:03	+/-10V	0.001 V	0.000 V	0.001 V

Configuring Selectable DIO Channels

Channels DIO-0 to DIO-11 support both DI and DO channel operations. When the ioLogik E2212 is turned on, each DIO channel will be configured to act as either a DI or DO channel, according to the **Power On Settings**. To switch between DI and DO channel operation, select the desired mode in the **I/O Direction** field under **Power On Settings**. After clicking **Apply**, you will need to restart the ioLogik E2242 for the new setting to take effect.



Configuring Digital Input Channels



The ioLogik E2242 provides up to 12 digital input (DI) channels,. Software filtering is used to control switch bounces. The filter is configurable in multiples of 0.5 ms and accepts values between 1 and 65535. For example, a setting of **2** would mean a 1 ms filter (2 × 0.5 ms).

A DI channel can be set to "DI" or "Event Counter" mode. In DI mode, the specifications are as follows:

Type	Logic 0	Logic 1
Dry contact	close to GND	open
Wet contact	0 to 3 V	10 to 30 V

In Event Counter mode, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When "Lo to Hi" is selected, the counter value increases when the attached switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is pushed and released.

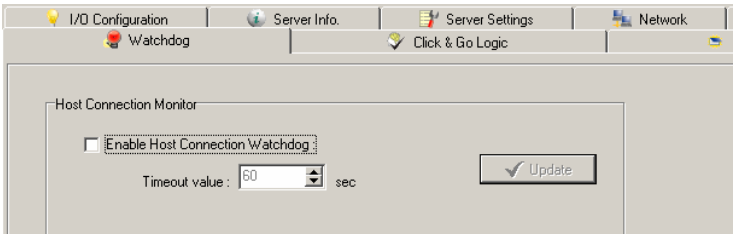
By default, the Event Counter value will be reset to zero if power is disconnected. If you select **Save status on power failure**, the Event Counter value will be saved when power is disconnected. When power is reconnected, the value will be as you left it. You can set **Power On Settings** to have counting resume immediately.

The Event Counter starts counting events when specified by a Modbus command or a Click&Go Logic rule. You can also specify counting to begin automatically when the ioLogik is powered on. To activate this function, select **Start** under **Counter mode parameter** in the **Power On Settings**.

You can control how an Event Counter channel behaves during a network disconnection with the **Safe Status Settings** and the **Host Connection Watchdog** in the **Watchdog**. When the **Host Connection Watchdog** is enabled, a network disconnection will activate the **Safe Status Settings**. The Event Counter channel can be configured to continue counting by selecting **Start/Continue** under **Counter mode parameter**. If **Start/Continue** is not selected, the Event Counter channel will suspend counting. If the **Host Connection Watchdog** is not enabled, then the **Safe Status Settings** will be ignored and the Event Counter channel will continue counting during a network disconnection.

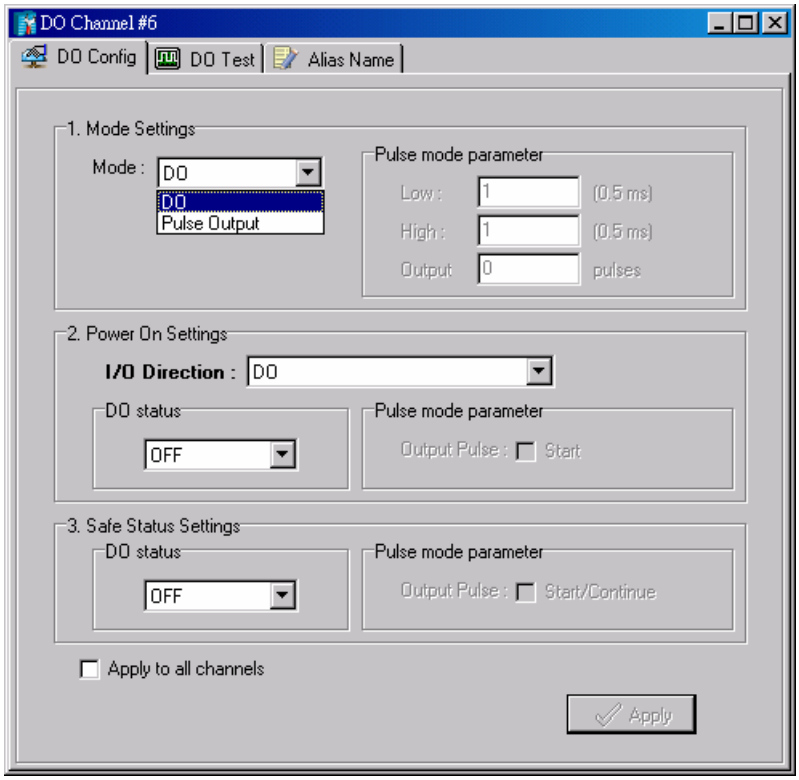
ATTENTION

The **Host Connection Watchdog** is disabled by default and must be enabled for Safe Status Settings to take effect.



The **Apply to all channels** option applies all settings to DI channels.

Configuring Digital Output Channels



The ioLogik E2242 provides up to 12 digital output channels.

A DO channel can be set to "DO" or "Pulse Output" mode. In DO mode, the specifications are as follows.

Type	Logic 0 (OFF)	Logic 1 (ON)
DO mode	open	short

In Pulse Output mode, the selected digital output channel will generate a square wave as specified in the pulse mode parameters. The low and high level widths are specified in multiples of 0.5 ms, with a maximum setting of 65,535 (32,767 ms).For example, you would enter 1000 for a width of 500 ms,. If the low width value is 5000 and the high width value is 5000, the pulse output would be a square wave with a 5-second pulse cycle. For the number of pulses, you can specify between 1 and 4,294,967,295 pulses or enter "0" for continuous pulse output.

When the ioLogik is first powered on, the status for each DO channel will be set to "OFF" by default. This behavior can be modified using the **Power On Settings**. You can set a DO channel to turn "ON" when the ioLogik is powered on, or to commence pulse output.

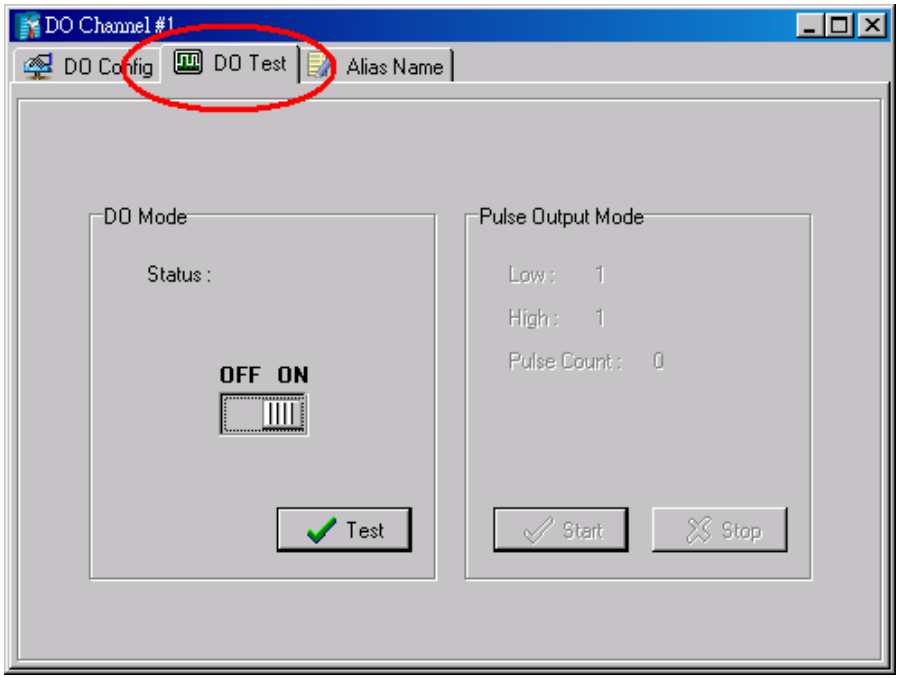
You can control how a DO channel acts when the network is disconnected by using the **Safe Status Settings** and the **Host Connection Watchdog**. When the **Host Connection Watchdog** is enabled, a network disconnection will activate the **Safe Status Settings**. The DO channel can be configured to turn on, turn off, or commence pulse output. If the **Host Connection Watchdog** is not enabled, then the DO channel status will remain unchanged during a network disconnection.

ATTENTION

The **Host Connection Watchdog** is disabled by default and must be enabled for **Safe Status Settings** to take effect.

Testing DI and DO Channels

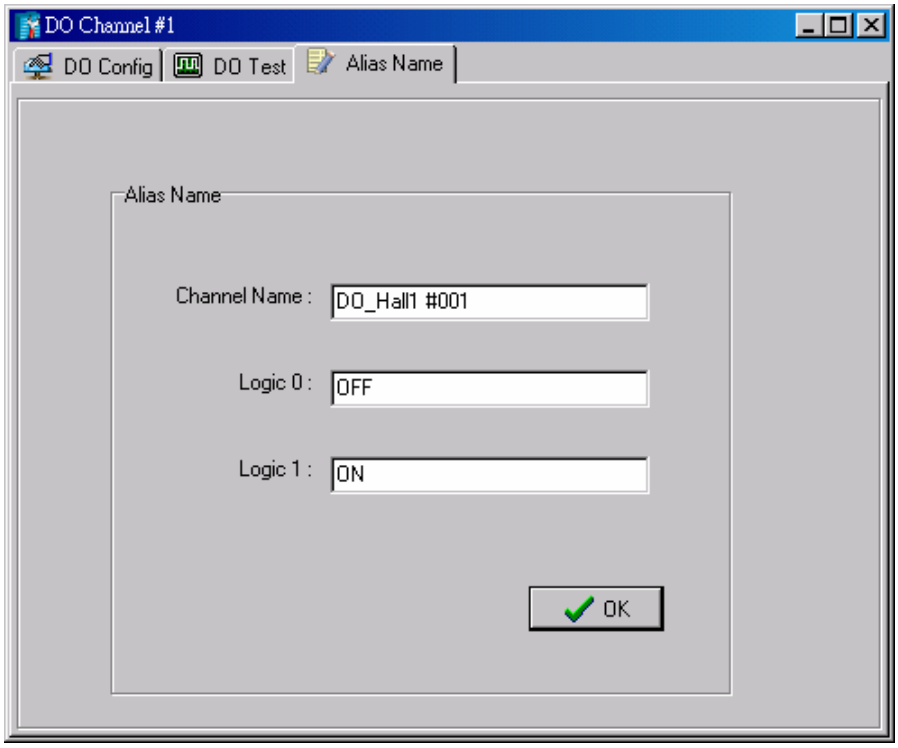
You can test each channel by opening the channel's configuration window and selecting the Test tab.



In the Test tab, you can see how a channel's status affects or is affected by the attached device. For DO channels, you can set the on/off status or start and stop pulse output. For DI channels, you can monitor the attached device's on/off status, or monitor the counter.

Alias Name

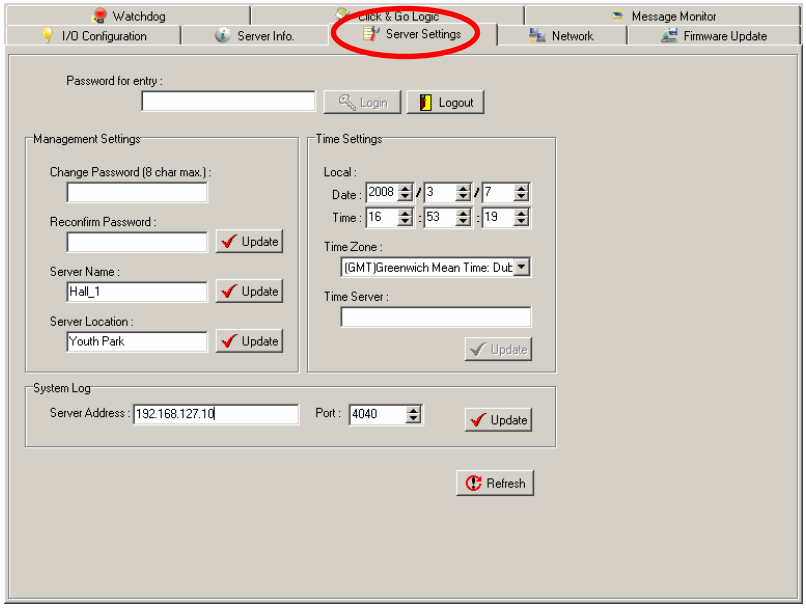
Alias Name helps users configure the alias of a DI or DO channel and define the status for logic 0/1 to be On/Off or vice versa. The Alias can be monitored by the ioAdmin utility, or can be queried using a user-defined program based on the Moxa MXIO library, or a standard Modbus/TCP protocol.



Server Settings Tab (Administrator)

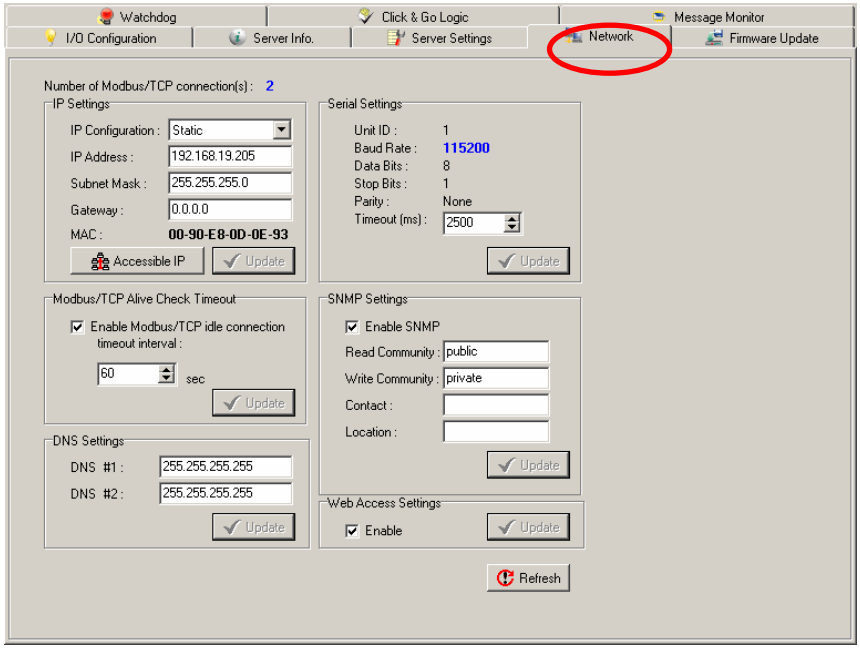
You can set up a password, server name, location, date, time zone, and time server in the Server Settings tab. ioAdmin supports long server names and a location description up to 58 chars. If you will be using ioEventLog to receive server status reports, such as for warm or cold starts, indicate the IP address and port number for the PC that will be running ioEventLog in the "System Log" field. The default port number is 4040.

For additional information, please refer the ioEventLog section later in this chapter.



Network Tab

The **Network** tab is available after you log in as an administrator. You can now configure IP settings, Modbus/TCP Alive Check Timeout settings, DNS settings, Serial settings, SNMP settings, and Web Access settings for the ioLogik.



IP Settings

You can set up a static or dynamic IP address for the ioLogik, as well as the subnet mask and gateway address. Click **Accessible IP** if you wish to allow only certain IP addresses to have network access to the ioLogik and attached sensors. Access will be granted only to the IP addresses that you list in the Accessible IP screen. Any requests from sources that are not on the accessible IP list will be unable to use Modbus/TCP or ioAdmin to access the ioLogik.

Modbus/TCP Alive Check Timeout Settings

The Modbus/TCP Alive Check Timeout is designed to avoid TCP connection failure. If the network host is unable to respond due to hardware failure or a network problem, the ioLogik will continue to wait for a response from the host. This will cause the TCP port to be occupied indefinitely by the host. When **Modbus/TCP idle connection timeout interval** is enabled, the ioLogik will automatically close the TCP connection when there is no TCP activity for the specified time.

DNS Settings

Use this field to specify up the IP addresses of one or to two DNS servers. DNS servers can be used to find available e-mail addresses when setting up Click & Go rules.

Serial Settings

You can view the reserved RS-485 communication parameters here, and set the timeout value for breaks in RS-485 communication. Note that the other serial communication parameters cannot be modified. If you wish to adjust the baudrate, you will need to use the physical dial on the back panel of the ioLogik.

SNMP Settings

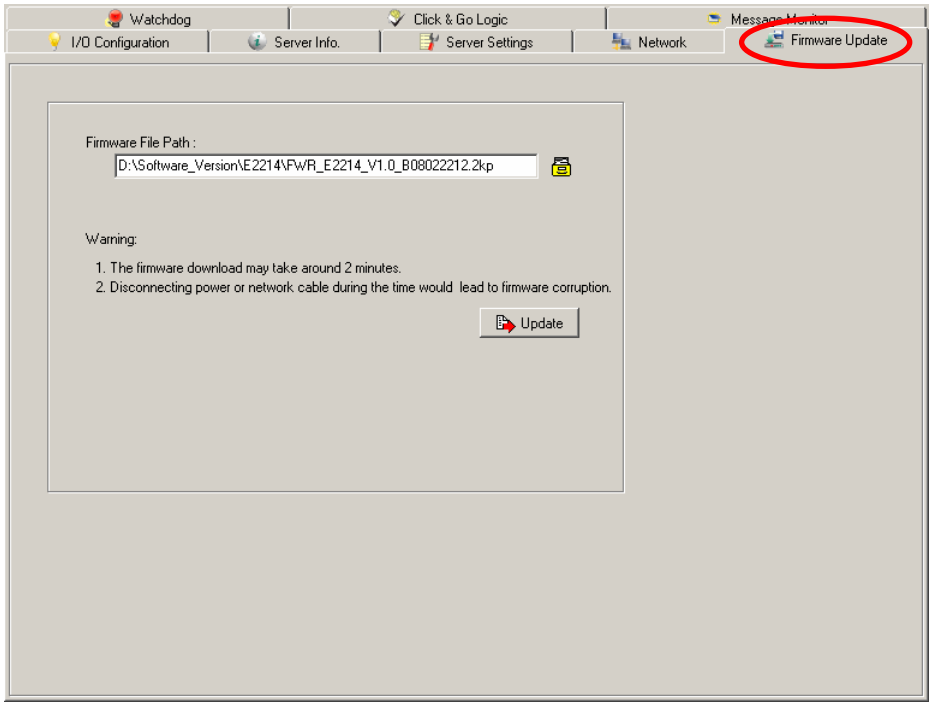
The ioLogik E2000 provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of the network and I/O devices with SNMP Network Management software. It is useful for building automation and telecom applications. Use these fields to enable SNMP and set the read and write community strings.

Web Access Settings

This field enables and disables the web console, which allows the ioLogik to be configured from a web browser. If this field is not enabled, you will not be able to open the web console.

Firmware Update Tab

The **Firmware Update** tab is available after you log in as an administrator. Enter the path to the firmware file or click on the icon to browse for the file. Click **Update** to update the ioLogik firmware. The wizard will lead you through the process until the ioLogik is restarted.



ATTENTION

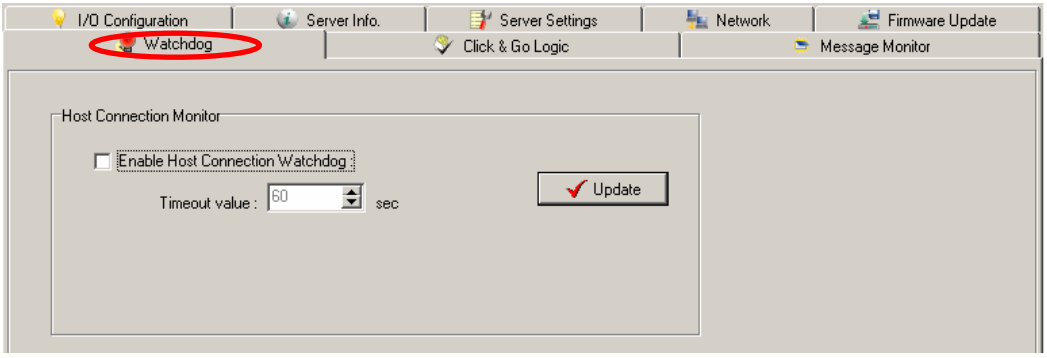
Do not interrupt the firmware update process! An interruption in the process might result in your device becoming unrecoverable.

After the firmware is updated, the ioLogik will restart and you will have to log in again to access administrator functions.

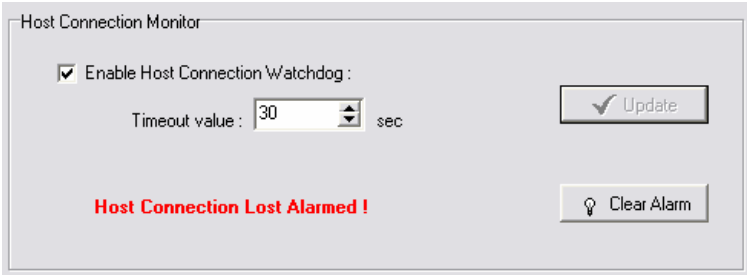
The firmware on any attached I/O expansion module, such as an ioLogik R2000 server, must be updated over the RS-485 bus. Firmware on cascaded modules cannot be updated over Ethernet.

Watchdog Tab

The **Watchdog** tab is available after you log in as an administrator. When enabled, the **Host Connection Watchdog** monitors the network connection. If the connection is lost for the specified **Timeout value**, the Watchdog will display a warning and activate the Safe Status settings for each DO channel and Event Counter channel. By default, the Watchdog is disabled. To enable the Watchdog, make sure that **Enable Host Connection Watchdog** is checked, set the **Timeout value**, and click **Update**.



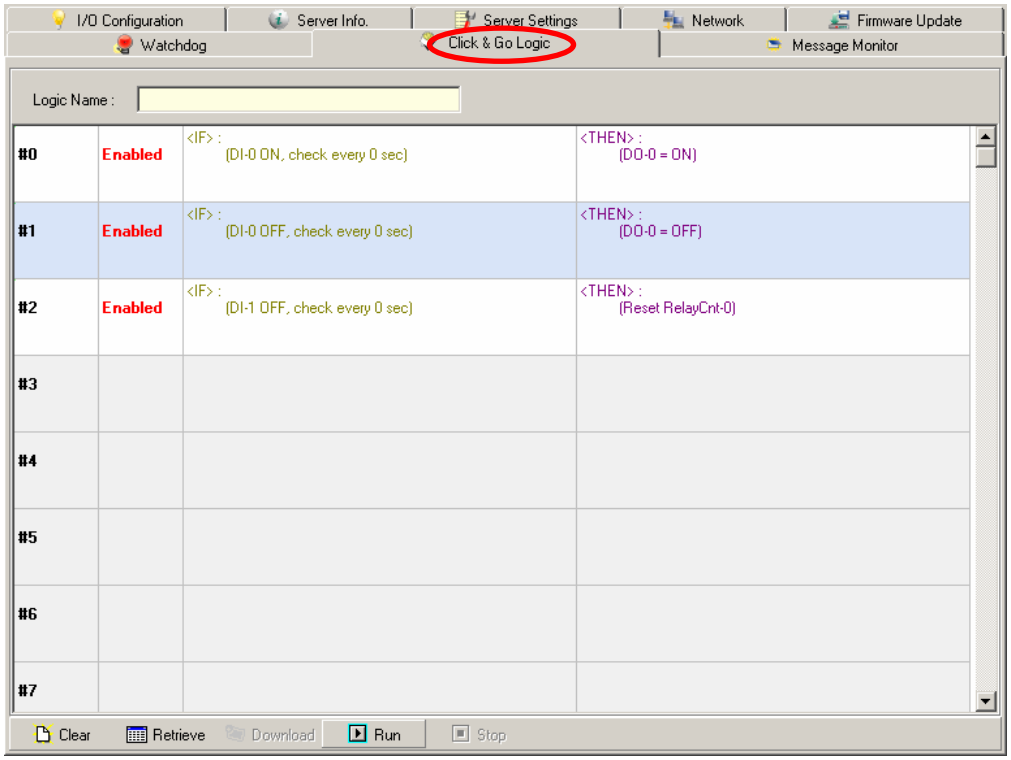
After the Watchdog is enabled, a warning will be displayed on the Watchdog tab if the network connection is lost.



After you restore the network connection, click **Clear Alarm** to reset the Watchdog and return to normal operation.

Click&Go Logic Tab

The Click&Go Logic tab is available after logging in as an administrator. This is where the ioLogik's Active Ethernet I/O system is configured. With a set of rules (known as a ruleset) defined through Click&Go, the ioLogik can report I/O status to a host as soon as user-defined I/O conditions have been met. Please refer to Chapter 5 for more detailed information on defining rules.

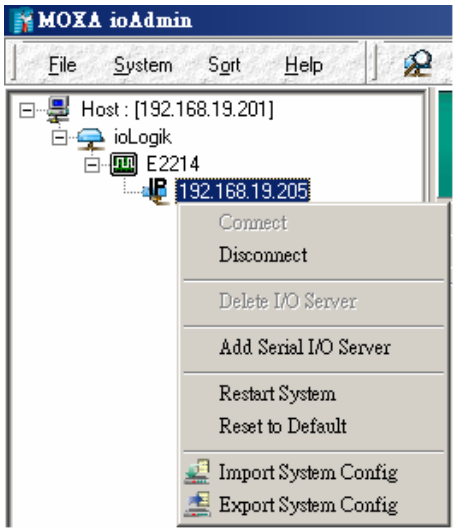


Changes in the Click&Go Logic tab are not effective until the ioLogik E2000 series is restarted, just like changes made in other tabs. After logging back in as an administrator and returning to the Click&Go Logic tab, click **Download** to view the current ruleset. Click **Run** to activate the ruleset and **Stop** to deactivate it.

I/O channels used by the Click&Go Logic cannot be controlled externally using ioAdmin's "Test" function, or from other Modbus software.

Server Context Menu

The Server context menu is accessed by right clicking on the server model name in the navigation panel.



Connect

Select this command to try connecting over the network to the selected ioLogik.

Disconnect

Select this command to drop the network connection with the selected ioLogik.

Delete I/O Server

Select this command to remove the selected ioLogik. The ioLogik must be disconnected first.

Add Serial I/O Server

Select this command to add an ioLogik I/O server by specifying its Unit ID.

Restart System

Select this command to restart the selected ioLogik. You will need to be logged in as an administrator to use this command.

Reset to Default

Select this command to reset all settings on the selected ioLogik, including console password, to factory default values. You will need to be logged in as an administrator to use this command.

Export System Config

Select this command to export the selected ioLogik's configuration to a text file. You will need to be logged in as an administrator to use this command. It is strongly recommended you use this method to back up your configuration after you have finished configuring the ioLogik for your application.

The following is a sample configuration file:

```
ioLogik E2214 Network I/O Server Configuration
==============================================
Date: 1970/01/-9525
Time: -2:-31:-2
Firmware: V1.0 Build08022212

[1. Model]
----------
MOD_TYPE=E2214 - Active Ethernet I/O Server (6DI + 6DO)
MOD_LOC=
MOD_NAME=

[2. I/O Configurations]
-----------------------
DI00=0,(DI),            DI00_FILTER=100,(150000.00ms)
DI01=0,(DI),            DI01_FILTER=100,(150000.00ms)
DI02=0,(DI),            DI02_FILTER=100,(150000.00ms)
DI03=0,(DI),            DI03_FILTER=100,(150000.00ms)
DI04=0,(DI),            DI04_FILTER=100,(150000.00ms)
DI05=0,(DI),            DI05_FILTER=100,(150000.00ms)

DO00=0,(DO),            DO00_PWN=1,(On),                DO00_PWSEQ=0,(Sec),
DO01=0,(DO),            DO01_PWN=1,(On),                DO01_PWSEQ=0,(Sec),
DO02=0,(DO),            DO02_PWN=1,(On),                DO02_PWSEQ=0,(Sec),
DO03=0,(DO),            DO03_PWN=1,(On),                DO03_PWSEQ=0,(Sec),
DO04=0,(DO),            DO04_PWN=1,(On),                DO04_PWSEQ=0,(Sec),
DO05=0,(DO),            DO05_PWN=1,(On),                DO05_PWSEQ=0,(Sec),

[3. Modbus address table]
-------------------------
CHANNEL         I/O TYPE        MODBUS REFERENCE        MODBUS ADDRESS (Dec, Hex)
DI00            Input           10001                   0000, 0x0000
DI01            Input           10002                   0001, 0x0001
DI02            Input           10003                   0002, 0x0002
DI03            Input           10004                   0003, 0x0003
DI04            Input           10005                   0004, 0x0004
DI05            Input           10006                   0005, 0x0005
```

Import System Config

Select this command to load a configuration for the selected ioLogik from a configuration text file. You will need to be logged in as an administrator to use this command. The new configuration will not take effect until the ioLogik has been restarted. This command can be used to restore a configuration after loading the factory defaults, or to duplicate a configuration to multiple ioLogik units.

Using TFTP to Import/Export Configuration

TFTP (Trivial File Transfer Protocol) was defined in 1980 to provide basic FTP functionality in a very simple protocol. Due to TFTP's simplicity, it can be implemented using a very small amount of memory, an important consideration when it was first developed. ioLogik E2000 I/O servers support the use of TFTP to import or export configuration files.

The following is an example using Windows TFTP and an ioLogik E2242 with an IP address of 192.168.127.254:

1. Enter "TFTP 192.168.127.254 GET ik2242.txt to get the ioLogik's configuration file.
2. Enter "TFTP 192.168.127.254 PUT ik2242.txt to load a configuration file onto the ioLogik

You must use "**ik2242.txt**" as the destination filename when copying a configuration file to the ioLogik E2000 unit. Otherwise, you will receive an error message as shown below:

C:\WINDOWS\system32\cmd.exe
C:\WINDOWS\system32>tftp 192.168.19.205 get abc.txt
Error on server : ioServer - Fail to export config settings !! #World Wide We
b

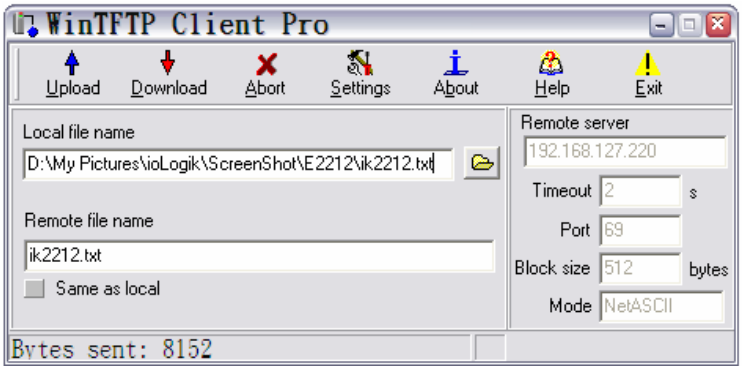
You can use TFTP in a batch file to transfer configuration files for different units. For example, you might have two configuration files that need to be copied to two different servers: **ik2242_1.txt** for 192.168.127.253, and **ik2242_2.txt** for 192.168.127.254. A batch file could be written as follows:

tftp 192.168.127.253 put ik2242_1.txt ik2242.txt

tftp 192.168.127.254 put ik2242_2.txt ik2242.txt

ATTENTION

You can also run TFTP client software, open the configuration file, and enter the remote server's IP. Note that both ASCII and Octet mode are supported. When the download process is complete, the I/O server will reboot. WinTFTP Client Pro is a trademark of WinTFTP. All rights reserved.



Using ioEventLog

Installing ioEventLog

ioEventLog is a Windows utility provided for the monitoring of the ioLogik E2000 series and attached I/O devices. It can be used from anywhere on the network to monitor the ioLogik.

1. **Installation from CD:** Insert the Document and Software CD into the host computer. Run SETUP.EXE, which is located in the root directory. The installation program will guide you through the installation process and install the ioEventLog utility.
2. **Open ioEventLog:** After installation is finished, run ioEventLog from **Start → Program Files → MOXA → IO Server → Utility → ioEventLog.**

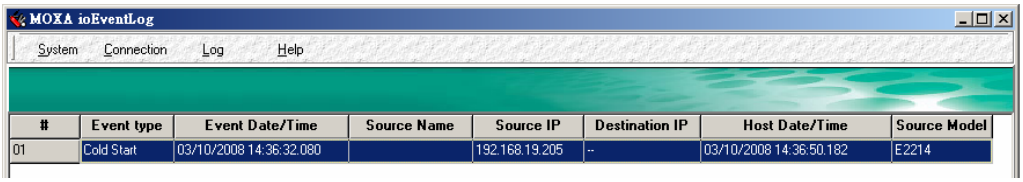
Basic Functions

ioEventLog is installed along with ioAdmin form the Document and Software CD. It is designed to help you keep a record of ioLogik status events over the network. The log is stored on the Windows PC. You will need to set up your ioLogik E2000 to send status events to the PC's IP address. The following events are monitored:

- cold start
- warm start

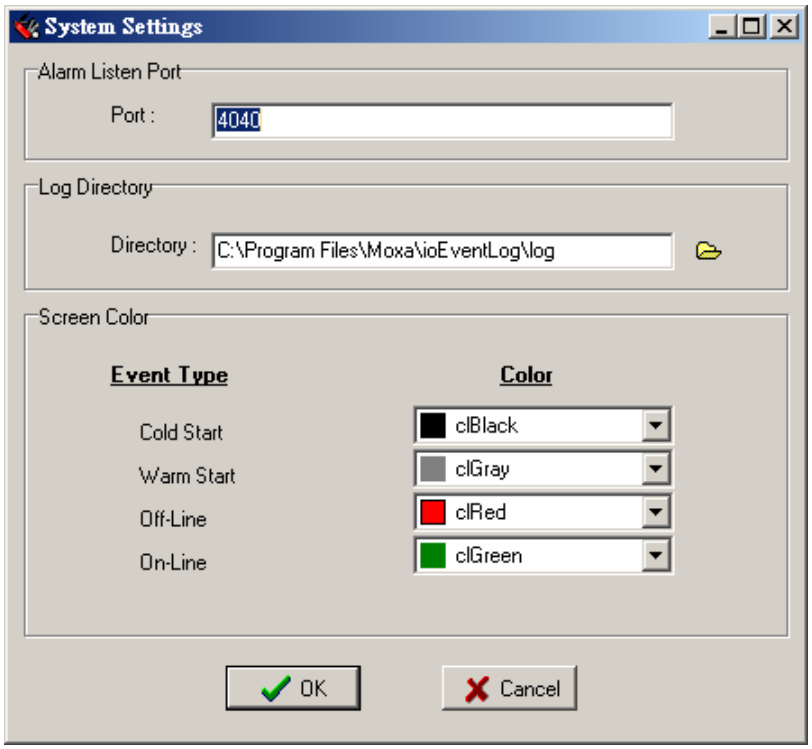
For each event, the following information is provided. The log can be sorted by any of these fields:

- event type
- event date and time
- ioLogik server source name
- source IP
- destination IP
- host date and time
- source model


MOXA ioEventLog
System
Connection
Log
Help
Event type Event Date/Time Source Name Source IP Destination IP Host Date/Time Source Model
01 Cold Start 03/10/2008 14:36:32.080 192.168.19.205 -- 03/10/2008 14:36:50.182 E2214

Configuration

In the System menu, select **Settings** to configure ioEventLog.

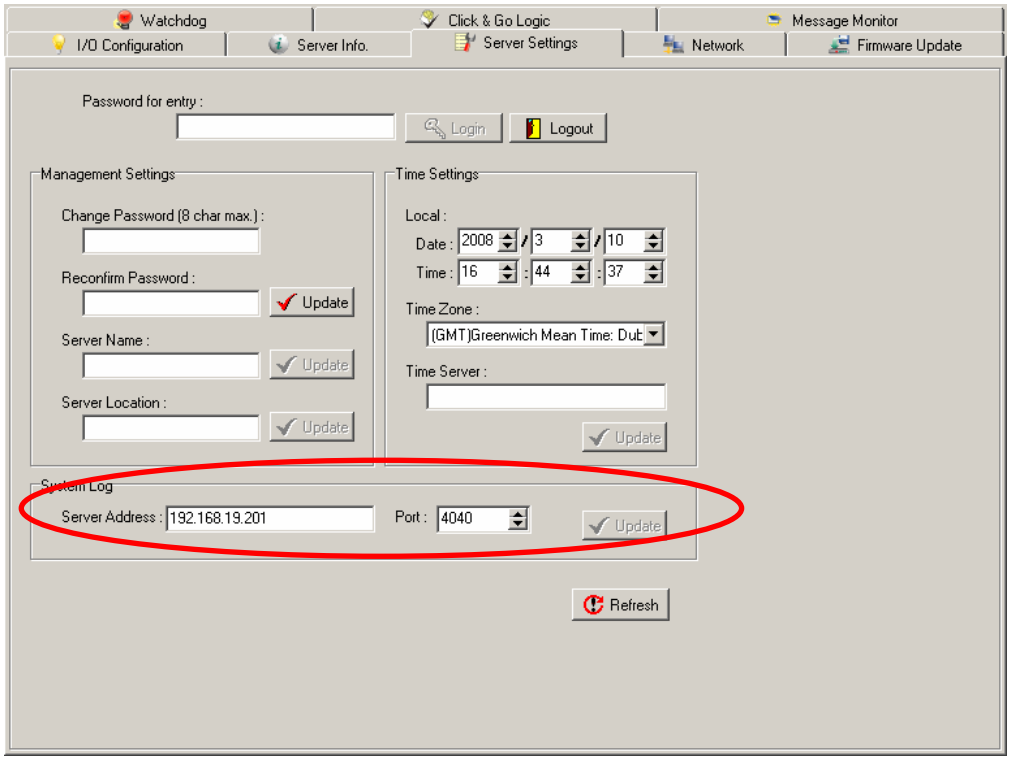


The **Alarm Listen Port** is the TCP port number that will be monitored for status events. You can modify this setting as necessary to receive signals through a firewall. It will need to match the settings for the ioLogik server that is being monitored.

The **Log Directory** is where the log files will be stored. The default directory is C:\Program Files\Moxa\ioEventLog\log. A separate log file is created for each day, with file names assigned automatically.

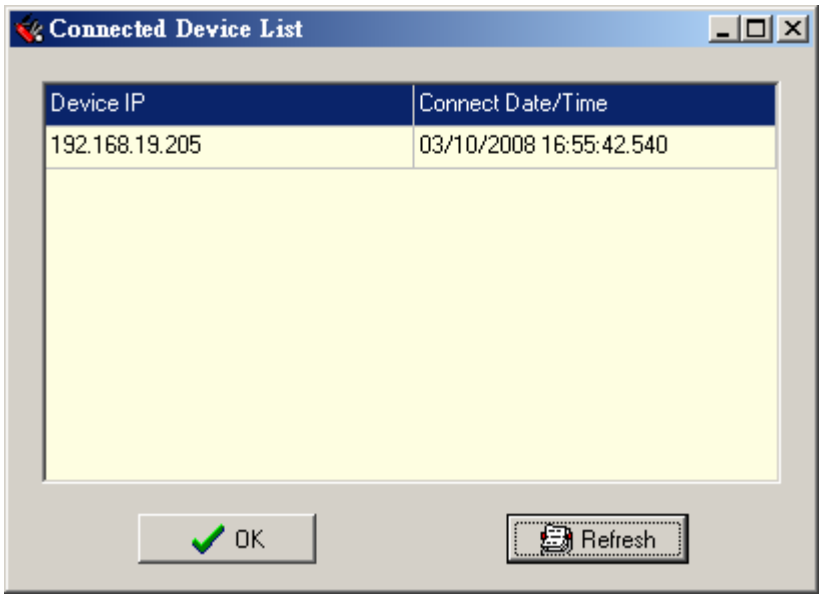
You can also select the color of each event type in the log.

To configure the ioLogik to report to the ioEventLog, use ioAdmin to configure the ioLogik in **Server Settings**.



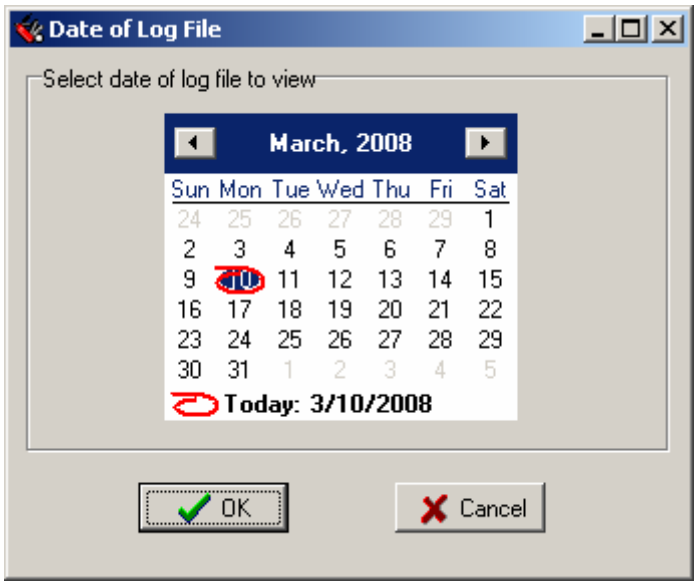
Checking Connected Devices

You can see which I/O servers are already connected to ioEventLog by selecting **Connected Device List** from the **Connection** menu. You will be prompted to view which devices are connected.



Opening Log Files

You can view previously saved logs by selecting **Open** from the Log menu. You will be prompted for the data that you wish to view.



The logs for the day that you select will be displayed in the Alarm Log Viewer window.

Clearing the Log

If you wish to clear the log, you can select Clear from Log menu. This will clear all events for the current day. The cleared events will not be saved in that day's logs. After the logs are cleared, new events will be displayed and recorded as usual.

4
Web Console Configuration

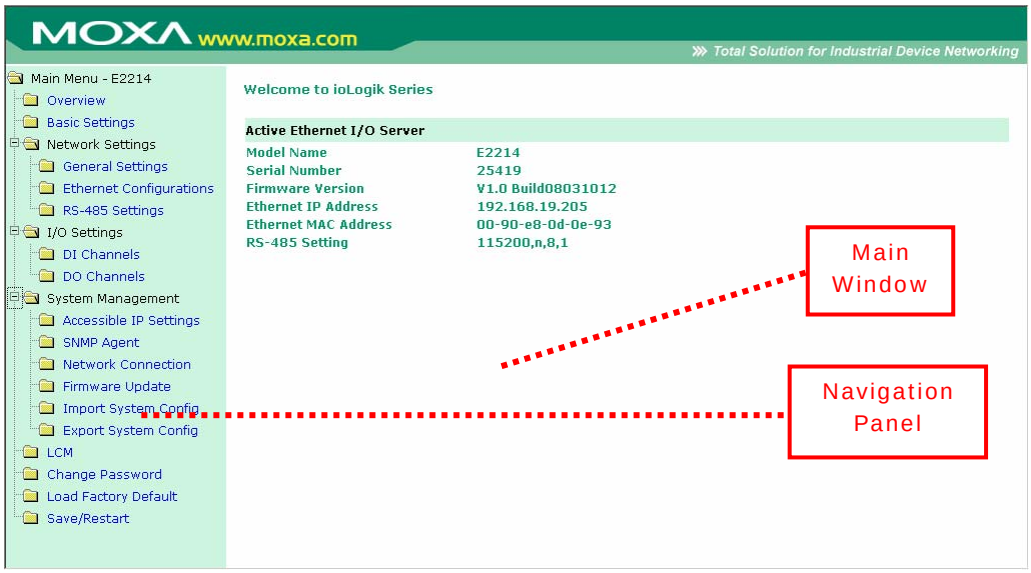
The ioLogik E2000 series built in web console can be used to configure many of the ioLogik's settings.

The following topics are covered:

- **Introduction to the Web Console**
- **Basic Settings**
- **Network Settings**
  - General Settings
  - Ethernet Configurations
  - RS-485 Settings
- **I/O Settings**
  - DI Channels
  - DO Channels
- **System Management**
  - Accessible IP Settings
  - SNMP Agent
  - Network Connection
  - Firmware Update
  - Import System Config
  - Export System Config
  - LCM
  - Change Password
  - Load Factory Default
  - Save/Restart

Introduction to the Web Console

The ioLogik web console is a browser-based configuration utility. When the ioLogik is connected to your network, the server's IP address in your web browser to access the web console. Note that although most configuration options are available in the web console, some settings are only available through ioAdmin. Furthermore, the web console can be disabled under Web Access Settings in ioAdmin. If you are unable to access the web console, check the Web Access Settings in ioAdmin.



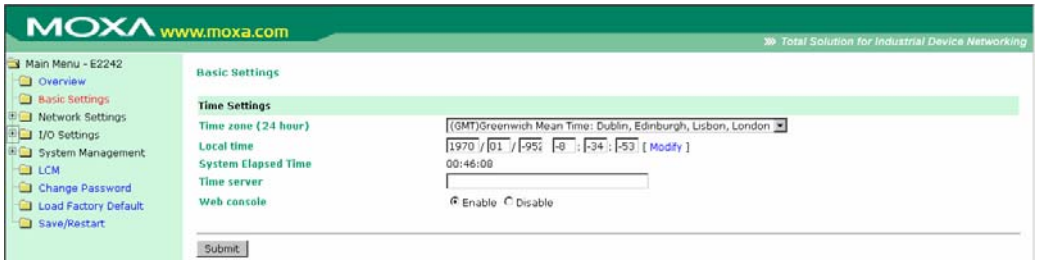
The left panel is the navigation panel and contains an expandable menu tree for navigating among the various settings and categories. When you click on a menu item in the navigation panel, the main window will display the corresponding options for that item. Configuration changes can then be made in the main window. For example, if you click **Basic Settings** in the navigation panel, the main window will show a page of basic settings that you can configure.

You must click **Submit** after making configuration changes. The Submit button will be located at the bottom of every page that has configurable settings. If you navigate to another page without clicking the Submit button, your changes will not be retained.

Submitted changes will not take effect until they are saved and the ioLogik is restarted! You can save and restart the server in one step by clicking on the Save/Restart button after you submit a change. If you need to make several changes before restarting, you can save your changes without restarting by selecting Save/Restart in the navigation panel. If you restart the ioLogik without saving your configuration, the ioLogik will discard all submitted changes.

Basic Settings

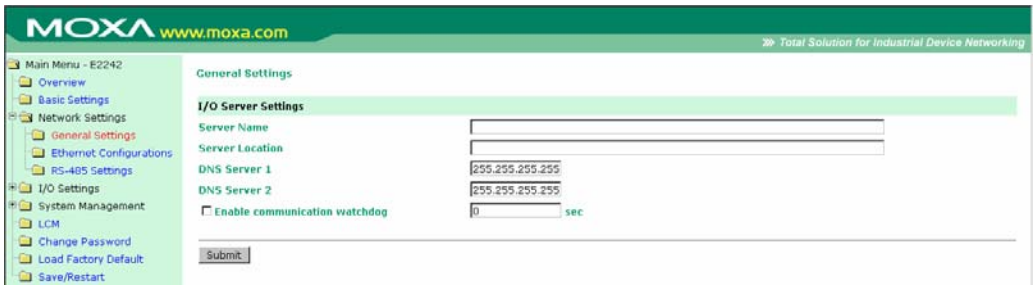
On the **Basic Settings** page, you can set the ioLogik's system time or provide the IP address of a time server for time synchronization.



Network Settings

General Settings

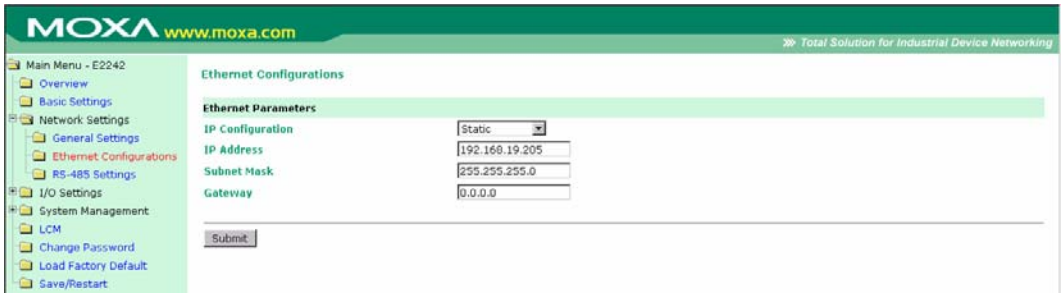
On the **General Settings** page, you can assign a server name and location to assist you in differentiating between different I/O servers and enable the Host Communication Watchdog and define the timeout value.



When enabled, the **communication watchdog** monitors the network connection. If the connection is lost for the specified number of seconds, the watchdog will activate the Safe Status settings for each DO channel and Event Counter channel. By default, the watchdog is disabled. To enable the Watchdog, select **Enable communication watchdog** and set the timeout value.

Ethernet Configurations

On the **Ethernet Configurations** page, you can set up a static or dynamic IP address for the ioLogik configure the subnet mask and gateway address.



RS-485 Settings

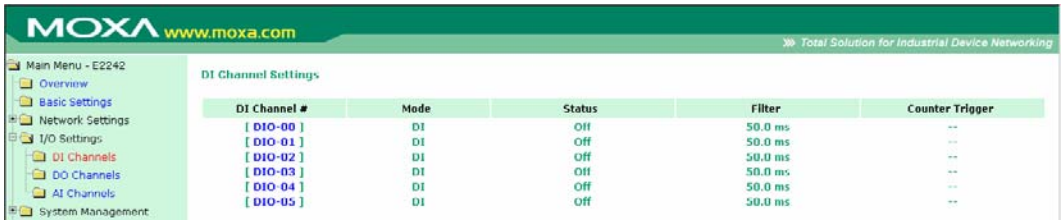
On the **RS-485 Settings** page, you can view the serial communication parameters, but no configuration changes are allowed. The baudrate can only be configured using the physical dial on the back of the unit. This is a reserved function.

I/O Settings

You can view the settings for DI and DO channels in the web console. DIO channels will be listed according to the configured channel type (DI or DO).

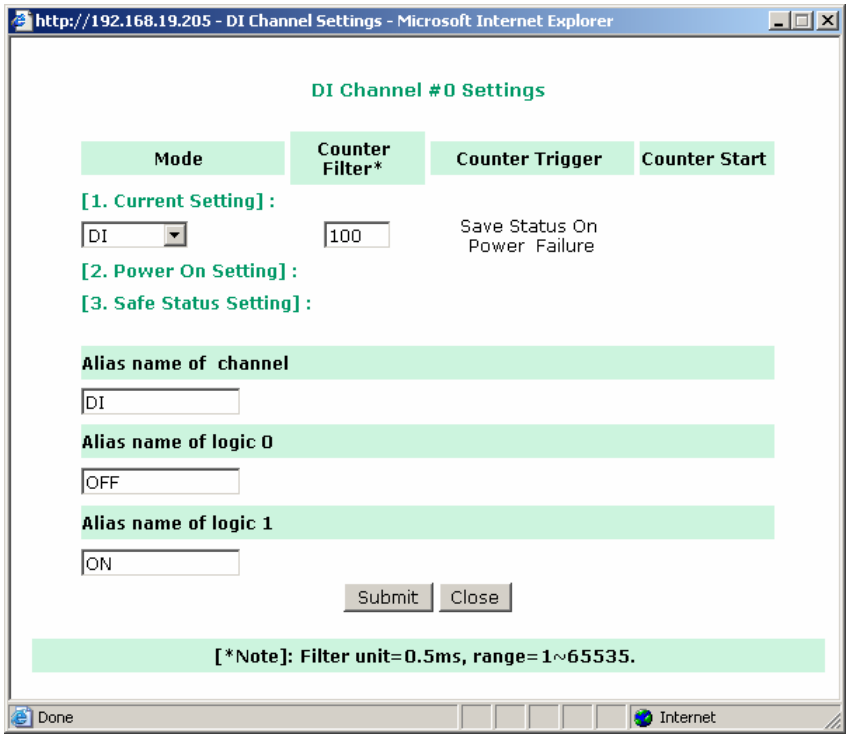
DI Channels

On the **DI Channels** page, you can view the status of each DI (digital input) channel. Only DIO channels that are acting as DI channels will be displayed.


MOXA www.moxa.com
Total Solution for Industrial Device Networking
Main Menu - E2242
Overview
Basic Settings
Network Settings
I/O Settings
DI Channels
DO Channels
AI Channels
System Management
DI Channel Settings
DI Channel # Mode Status Filter Counter Trigger
[DIO-00] DI Off 50.0 ms --
[DIO-01] DI Off 50.0 ms --
[DIO-02] DI Off 50.0 ms --
[DIO-03] DI Off 50.0 ms --
[DIO-04] DI Off 50.0 ms --
[DIO-05] DI Off 50.0 ms --

Click on a channel to see that channel's configuration options. DI channels can operate in DI mode or Event Counter mode. Software filtering is used to control switch bounces. The filter is configurable in multiples of 0.5 ms and accepts values between 1 and 65535. For example, a setting of **2** would mean a 1 ms filter (2 × 0.5 ms). For Event Counter channels, make sure that the filter is not set to 0, otherwise the counter will never be activated.

NOTE: DI/DO mode must be configured via ioAdmin.



A DI channel can be set to "DI" or "Event Counter" mode. In DI mode, the specifications are as follows:

Type	Logic 0	Logic 1
Dry contact	close to GND	open
Wet contact	0 to 3 V	3.5 to 30 V

In Event Counter mode, the channel accepts limit or proximity switches and counts events according to the ON/OFF status. When "Lo to Hi" is selected, the counter value increases when the attached switch is pushed. When "Hi to Lo" is selected, the counter value increases when the switch is pushed and released.

By default, the Event Counter value will be reset to zero if power is disconnected. If you select **Save Status on Power Failure**, the Event Counter value will be saved when power is disconnected. When power is reconnected, the value will be as you left it. You can set **Power On Setting** to have counting resume immediately.

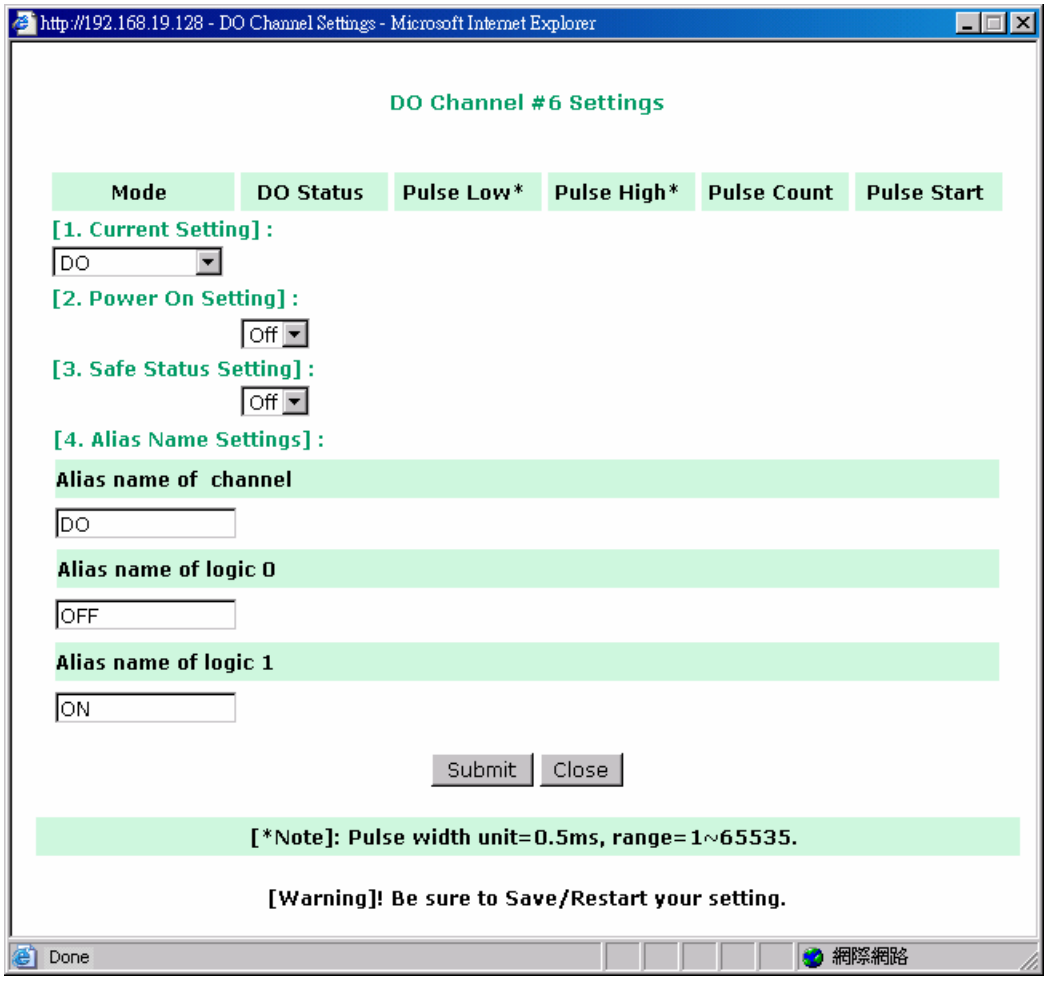
DI channels that are in Event Counter mode can begin counting automatically when the ioLogik is powered on. To activate this function, enable **Power On Setting.** If **Power On Setting** is not enabled, the channel will only start counting events when specified by a Modbus command or Click&Go Logic rule.

You can control how an Event Counter channel behaves during a network disconnection with the **Safe Status Setting** and the **Host Connection Watchdog**. With the Watchdog disabled, the Event Counter continues counting events even when there is a network disconnection. With the Watchdog enabled, the **Safe Status Setting** specifies whether the Event Counter continues or suspends counting when there is a network disconnection. Counting will continue if **Safe Status Setting** is enabled; counting will be suspended if **Safe Status Setting** is not enabled.

DO Channels

On the **DO Channels** page, you can view the status of each DO (digital output) channel. Only DIO channels that are acting as DO channels will be displayed.

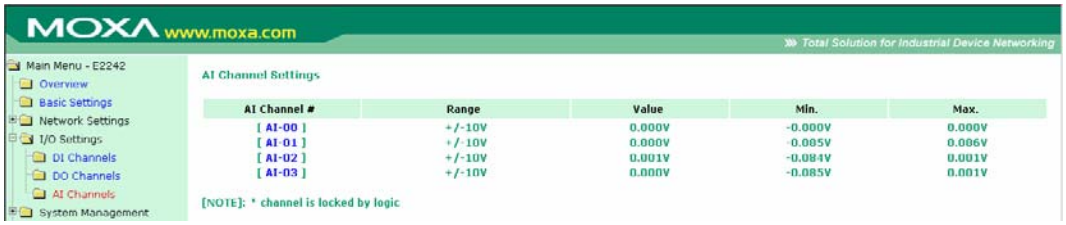
Click on a channel to see that channel's configuration options. DO Channels can operate in DO mode or Pulse Output mode. In DO mode, output is either on or off. In Pulse Output mode, a configurable square wave is generated.



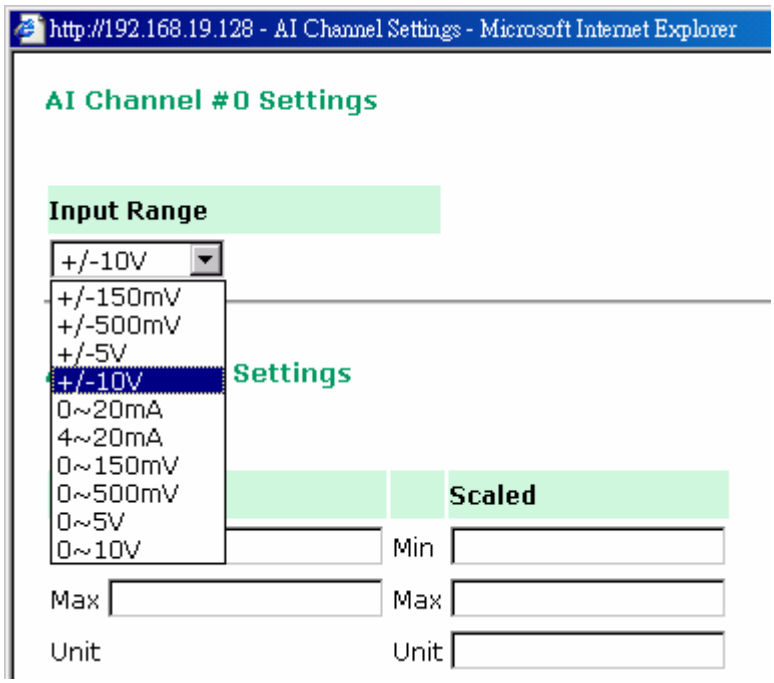
By default, DO and Pulse Output channels are set to "off" when the ioLogik is powered on. You can set a channel to automatically turn on or begin pulse output when the ioLogik is powered on, by enabling **Power On Setting.**

AI Channels

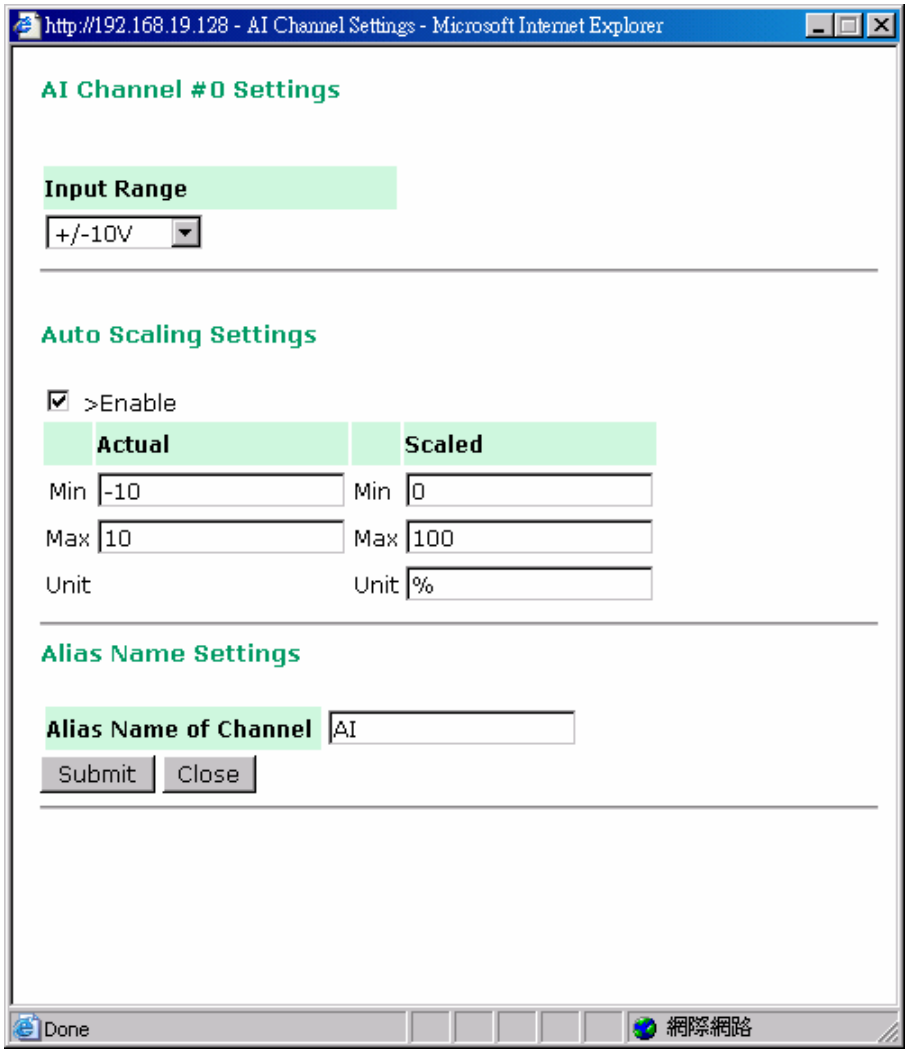
On the **AI Channels** page, you can view the status of each AI (analog input) channel.


MOXA www.moxa.com
Total Solution for Industrial Device Networking
Main Menu - E2242
Overview
Basic Settings
Network Settings
I/O Settings
DI Channels
DO Channels
AI Channels
System Management
AI Channel Settings
AI Channel # Range Value Min. Max.
[AI-00] +/-10V 0.000V -0.000V 0.000V
[AI-01] +/-10V 0.000V -0.005V 0.006V
[AI-02] +/-10V 0.001V -0.004V 0.001V
[AI-03] +/-10V 0.000V -0.005V 0.001V
[NOTE]: * channel is locked by logic

Click on a channel to see that channel's configuration options. AO Channels can operate in different input modes, such as +/-10V, or 4-20mA.



Auto Scaling can also help to eliminate high or low end extremes. For example, if 17 mA represents a dangerous situation of high temperature, it will not be necessary to get a temperature that is even higher. In this case, users can cut off values beyond 17 mA and convert it to a proprietary level of danger, such as Level 5.



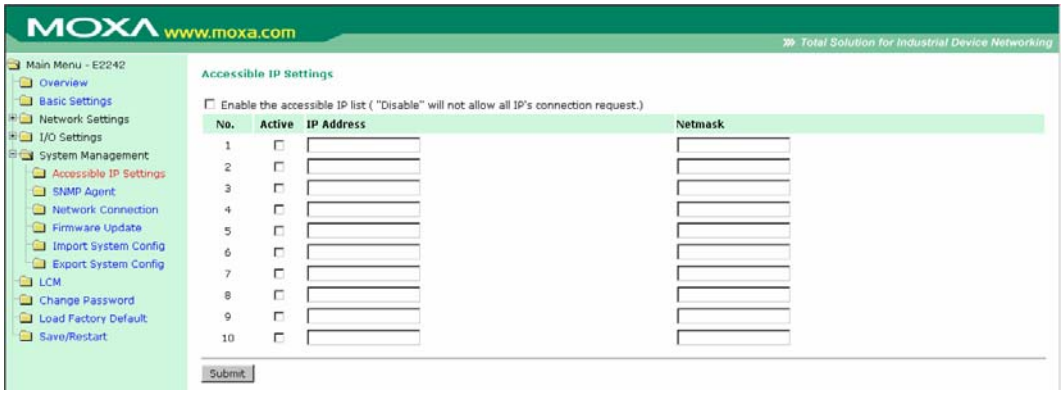
Alias Name

Alias Name helps users configure the alias of a DI, DO, or AI channel and define the status for logic 0/1 to be On/Off or vice versa.

System Management

Accessible IP Settings

On the **Accessible IP Settings** page, you can control network access to the ioLogik by allowing only specified IP addresses. When the accessible IP list is enabled, a host's IP address must be listed in order to have access to the ioLogik.



You can add a specific address or range of addresses by using a combination of IP address and netmask, as follows:

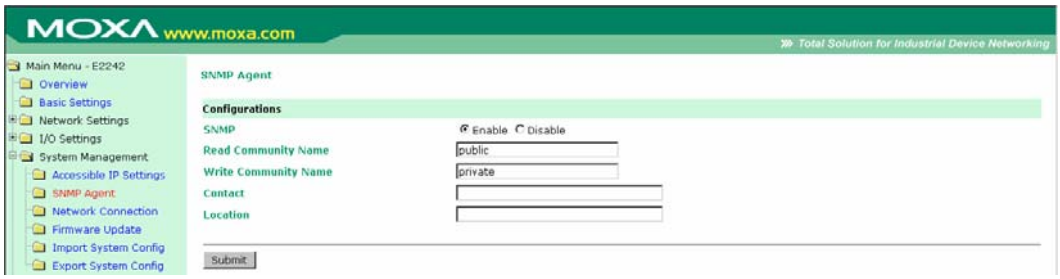
- **To allow access to a specific IP address**
  Enter the IP address in the corresponding field; enter **255.255.255.255** for the netmask
- **To allow access from hosts on a specific subnet**
  For both the IP address and netmask, use **0** for the last digit (e.g., **192.168.1.0** and **255.255.255.0**).
- **To allow unrestricted access**
  Deselect the Enable the accessible IP list option.

The following table shows additional configuration examples.

Allowed Hosts	IP address	Netmask
Any host	Disable	Disable
192.168.1.120	192.168.1.120	255.255.255.255
192.168.1.1 to 192.168.1.254	192.168.1.0	255.255.255.0
192.168.0.1 to 192.168.255.254	192.168.0.0	255.255.0.0
192.168.1.1 to 192.168.1.126	192.168.1.0	255.255.255.128
192.168.1.129 to 192.168.1.254	192.168.1.128	255.255.255.128

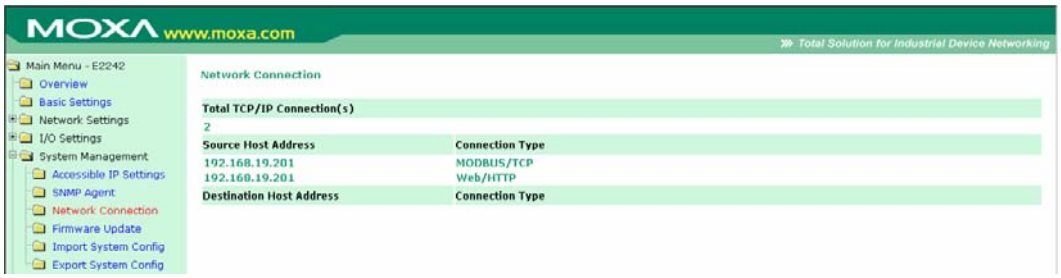
SNMP Agent

On the **SNMP Agent** page, you can enable SNMP and set the read and write community strings. The ioLogik provides SNMP v2 (Simple Network Management Protocol) to allow monitoring of network and I/O devices with SNMP Network Management software. This is useful for building automation and telecom applications.



Network Connection

On the **Network Connection** page, you can view the TCP connections from other hosts. This feature can help you manage your devices.

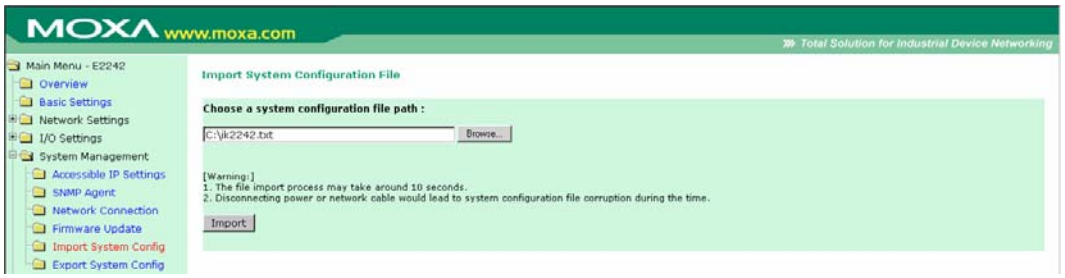


Firmware Update

On the **Firmware Update** page, you can load new or updated firmware onto the ioLogik.

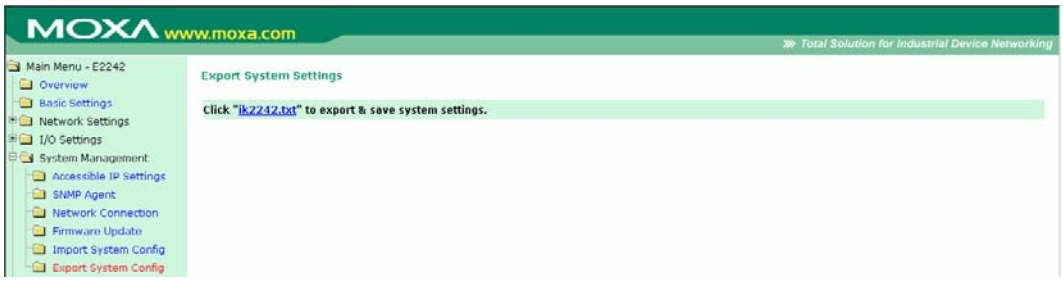
Import System Config

On the **Import System Config** page, you can import a configuration onto the ioLogik server. The configuration file can be generated by ioAdmin or through the web console. This function can be used to duplicate settings between ioLogik servers. You will be prompted for the location of the configuration file (i.e., "ik2242.txt").



Export System Config

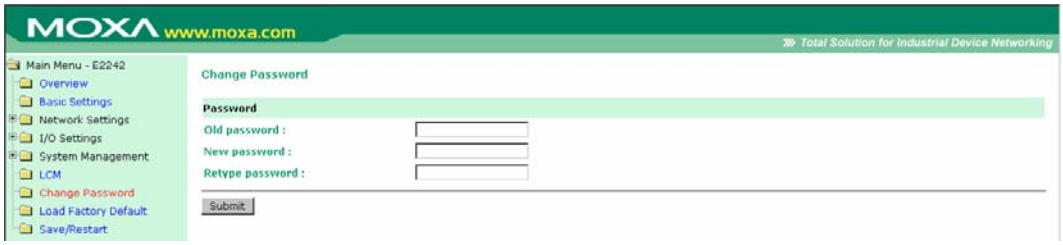
On the **Export System Config** page, you can save the ioLogik's configuration into a file for backup or import into another ioLogik server.



LCM

If you have installed the optional LCM, you can view the status and firmware details on the LCM page.

Change Password



For all changes to the ioLogik E2000's password protection settings, you will first need to enter the old password. Leave this blank if you are setting up password protection for the first time. To set up a new password or change the existing password, enter your desired password under both **New password** and **Confirm password**. To remove password protection, leave **New password** and **Confirm password** blank.

ATTENTION

If you forget the password, the ONLY way to configure the **ioLogik** is by using the reset button to load the factory defaults.

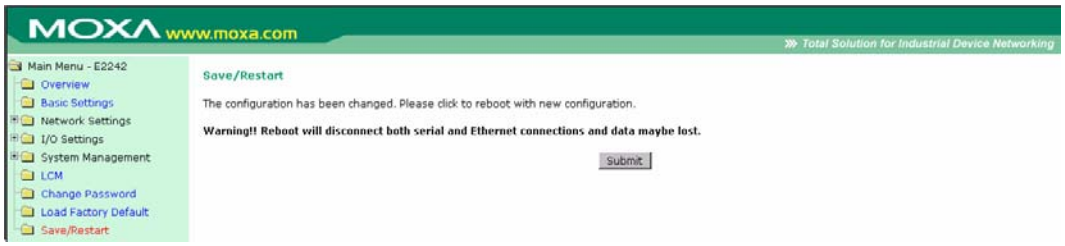
Before you set a password for the first time, it is a good idea to export the configuration to a file when you have finished setting up your ioLogik. Your configuration can then be easily imported back into the ioLogik. This will be useful if the ioLogik has been reset to factory defaults due to a forgotten password or for other reasons.

Load Factory Default

This function will reset the ioLogik to factory default settings. All previous settings including the console password will be lost.

Save/Restart

If you change the configuration, do not forget to reboot the system.



5
Click&Go Logic

Click&Go Logic was developed by Moxa to provide an easy way to program your ioLogik E2000 series for Active Ethernet I/O operation. In this chapter, we will show you how Click&Go Logic works and how to use it to develop your Active Ethernet I/O system.

The following topics are covered in this chapter:

- **Overview**
- **Features**
- **Click&Go Logic Basics**
  - Working with Rules
- **Defining Logic Rules**
  - IF Conditions
  - More Info on Repeat Interval vs. Edge Detection
  - THEN Actions
- **Defining Peer-to-Peer I/O Rules**
  - Configuring Input Module
  - Configuring Output Module
- **Working with Click&Go Rulesets**
  - Activating the Ruleset
  - Ruleset Management Bar
  - Ruleset Import/Export
- **Application Examples**
  - Local I/O Control
  - Active I/O Messages
  - Event Report by E-mail
  - Remote Output Control When Click&Go is Activated
  - Peer-to-Peer I/O

Overview

The ioLogik E2000 series system eliminates the need for host computers to continually poll I/O devices for status. Instead, the server itself is able to monitors the status of each I/O device and take the appropriate action when the I/O status satisfies a user-defined condition. For example, the ioLogik could be configured to send a TCP/UDP message only when the switch attached to DI-0 is turned on. This event-based structure results in a much improved response time and a much reduced load on the host computer's CPU and on network bandwidth.

The Active Ethernet I/O system is easily configured using Moxa's Click&Go Logic. With Click&Go Logic, you can easily and intuitively configure when and how I/O information is transmitted over the network. Simple If – Then statements are used to specify conditions that are required for certain actions to take place. Up to three conditions and three actions can be combined in a rule, and you can define up to 16 rules. Supported actions include sending SNMP traps or TCP/UDP messages to up to 10 hosts at a time.

Click&Go can also be used to map an input channel on one ioLogik to an output channel on another ioLogik, for peer-to-peer I/O communication. Up to five different IP addresses can be entered as the output destination. Peer-to-peer I/O provides a very flexible and easy way to extend I/O signals or connect remote on/off switches. It can be used, for example, to replace or extend the wiring of PLC or DCS systems over Ethernet.

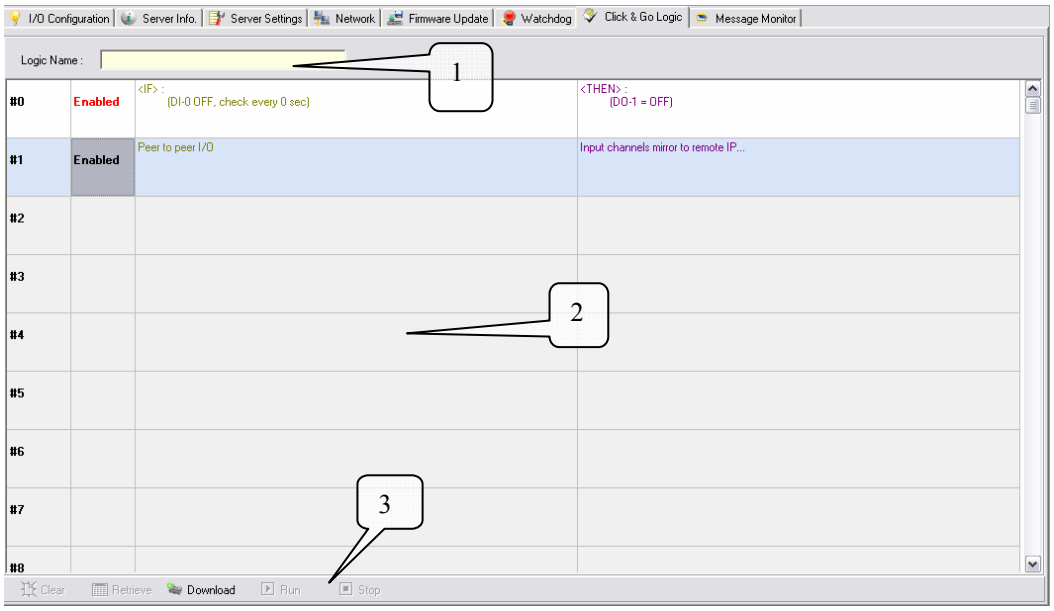
Features

Click&Go Logic's key features are as follows:

- Easy local logic control using intuitive IF/THEN style construction
- Up to 16 user-defined rules
- Up to 3 I/O-based conditions and 3 DO or network actions per rule
- Choice of email, TCP, UDP, or SNMP trap for active I/O messaging
- Customizable message content with dynamic fields for time, date, IP address, and more
- Up to 10 simultaneous IP destinations for TCP/UDP messaging
- Up to 5 simultaneous IP destinations for peer-to-peer I/O
- Internal register function for logic redirection and remote output control when Click&Go is running
- Timer Delay function for timing events
- Configurable interval for time-triggered events

Click&Go Logic Basics

To use Click&Go Logic, open ioAdmin and log on as an ioLogik administrator on the Server Settings tab. Once you are logged on, go to the Click&Go Logic tab. It should appear as below:

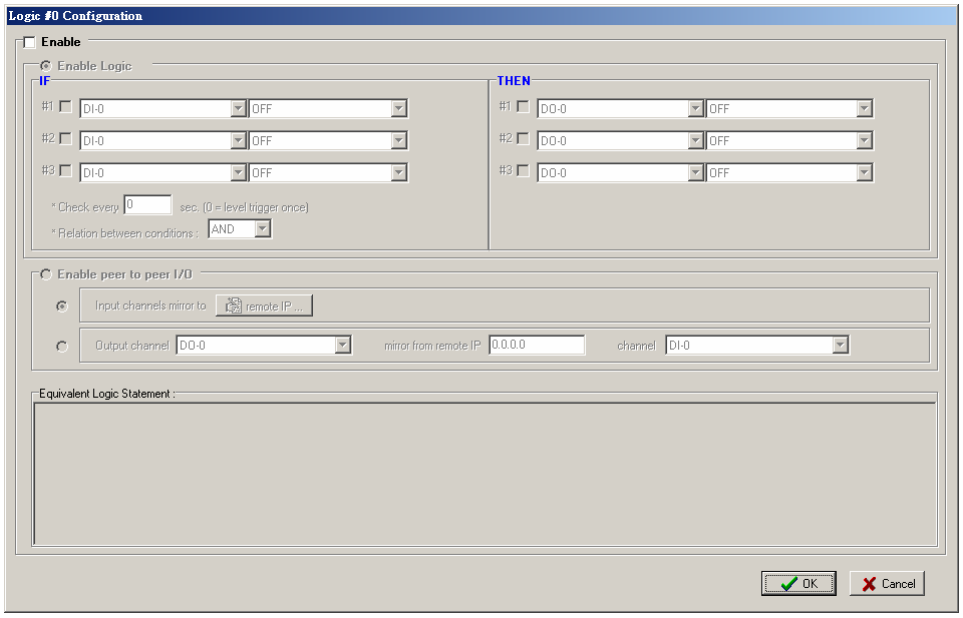


Click&Go Logic Tab
1. **Logic Name**: In this field, you can assign a name for the set of rules.
2. **Rules List**: In this area, each rule's conditions, actions, and status are displayed.
3. **Ruleset Management Bar**: In this area, you manage the ruleset.

Working with Rules

Rules are the building blocks of your ioLogik Active Ethernet I/O system. With rules, you define the exact trigger conditions for transmission of I/O information as well as the content and destination of that information. DO operation can also be automated through DI trigger conditions or mapped directly to a remote DI channel on another ioLogik.

In the main screen, you will see a list of the rules in the current ruleset. Double click on a rule to open that rule's configuration window, or double click on an empty rule to start a new rule.



The configuration window is where the rule is defined. There are two types of rules that can be defined: Logic rules and peer-to-peer I/O rules. Logic rules are used for DI event-based triggers, whereas peer-to-peer I/O rules are used for mapping I/O channels between two ioLogik units.

The **Equivalent Logic Statement** at the bottom shows a real-time text-based summary of the rule that you are defining. It can be a useful way to make sure that the rule is designed as you intended.

ATTENTION

When configuring input or output control or response values, **you must select the unit of measurement before entering a value**. If you select a unit of measurement after entering a value, the value will not be retained. Also, when an I/O channel is being used in a Click&Go Logic rule, the channel's range and units can not be modified.

Defining Logic Rules

IF Conditions

Under the **IF** column, you can set up to 3 sensor conditions that must be satisfied for the actions under the **THEN** column to take place. As soon as the IF conditions are satisfied, the specified THEN action is performed. For example, an alarm can be activated when a door is opened. Use the pull downs to specify the conditions and units of measurement (e.g. DI-0=OFF). The available operators are =, <, >, <=, and >=.

Edge detection can be used to refine the conditions. For example, the condition **DI-0=OFF** is satisfied for as long as DI-0 remains off. The condition **DI-0=ON to OFF**, however, is only satisfied only at the instant that DI-0 turns off.

You may want an action to be repeated for as long as the conditions remain satisfied. For example, instead of turning on an alarm, you might want to send an alert message every five minutes for as long as the door is open. You can set a repeating interval in the **Check every ___ sec** field. The THEN action will be repeated at the specified interval, as long as the set of IF conditions is satisfied. Note that if edge detection is used in the IF conditions, the **Check every ___ sec** field will be of no use, because edge-detection conditions can only satisfied for an instant rather than over a sustained period of time. More information is provided below.

Under **Relation between conditions**, select **AND** to specify that all conditions must satisfied for the actions to take place; select **OR** to specify that any one of the conditions can be satisfied for the actions to take place.

InternalREG stands for "internal register." This condition represents a status flag to link the status of the first logic to the second one. The **InternalReg** function also allows a PC to control the ioLogik E2242's local output (e.g., digital output, active message, e-mail and SNMP Trap) remotely.

TimerDelay manages time. Timeout and a period of delay can now be defined in the Click&Go logic, giving the user more flexibility in handling events.

You may wish to set up a heartbeat status message or action that repeats at regular intervals as long as the ioLogik is operational. In this case, you can set up a **Time Trigger** rule as the first IF condition. For example, you can set a 3600 second interval so that a TCP status message is sent every hour. When using Time Trigger with pulse output, make sure that trigger interval is at least one second greater than the output pulse cycle.

IF Conditions	Operators	Remark
DI-*x*	ON, OFF, ON to OFF, OFF to ON	Depends on DI type
Counter-*x*	=,>,<,>=,<=,Change	Max value: 4,294,967,295
InternalReg-x	TRUE, FALSE	
TimerDelay	TIMEOUT	
Time Trigger (Condition #1 only)	N/A	Max value: 4,294,967,295 for time interval

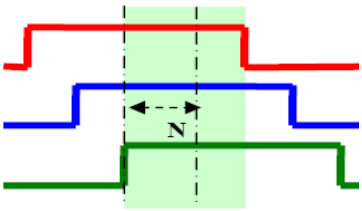
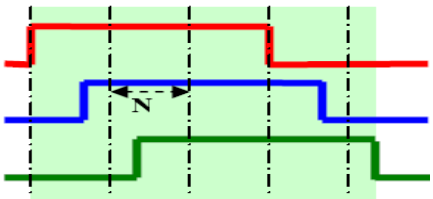
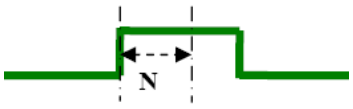
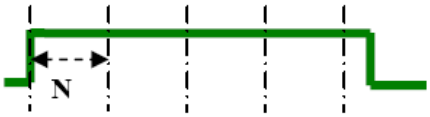
More Info on Repeat Interval vs. Edge Detection

The **Check every ___ sec** field is designed to allow THEN actions to be repeated when the specified conditions are sustained. However, if a condition is based on edge detection (i.e., **ON to OFF** or **OFF to ON**), it cannot be sustained, and the **Check every ___ sec** field will have no effect.

The following scenarios illustrate how edge detection affects the **Check every ___ sec** field. In each diagram, the statuses of three sensors are shown over a period of time, with a high signal corresponding to a "true" condition. The green shaded area shows the duration of time that the IF conditions have been met.

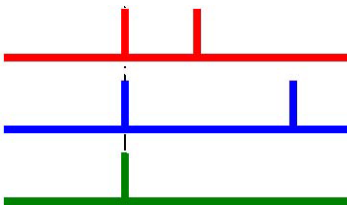
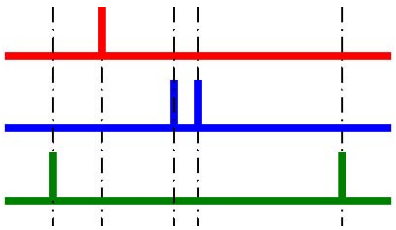
No Edge Detection

In this scenario, the rule checks each sensor for "on" status, so edge detection is not involved. As long as the sensors remain on, the required conditions are satisfied, and the THEN actions will repeat at interval *N*.

DI-0 = ON DI-1 = ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	"Check every *N* sec"	"Check every *N* sec"
"THEN" action triggered		

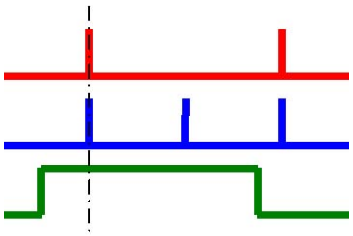
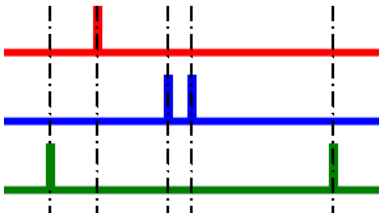
Edge Detection for All Conditions

In this scenario, the rule checks each sensor for a change from "off" to "on" status, meaning only edge detection conditions are used. As soon as a sensor changes from "off" to "on", the condition is satisfied, but only for that instant. Right after that instant, the condition is no longer satisfied because it is no longer changing from "off" to "on". The repeat interval will have no effect, since edge conditions cannot be sustained over a period of time.

DI-0 = OFF to ON DI-1 = OFF to ON DI-2 = OFF to ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	N/A
"THEN" action triggered		

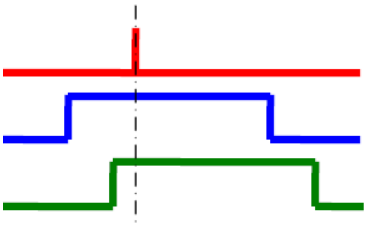
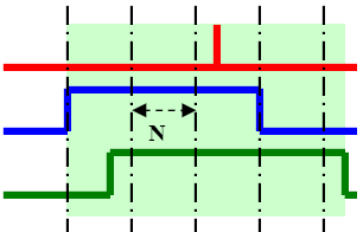
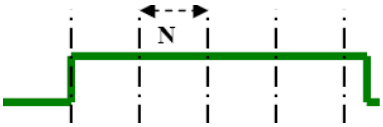
Edge Detection for Two Conditions

In this scenario, the rule checks DI-0 and DI-1 for a change in status and DI-2 for status only. The repeat interval will not have an effect if the AND relationship is used, because the two edge conditions can never be sustained over a length of time. With the OR relationship, the IF conditions will be satisfied as long as DI-2 is "on", and the THEN actions will be triggered over interval *N*.

DI-0 = OFF to ON DI-1 = OFF to ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	N/A
"THEN" action triggered		

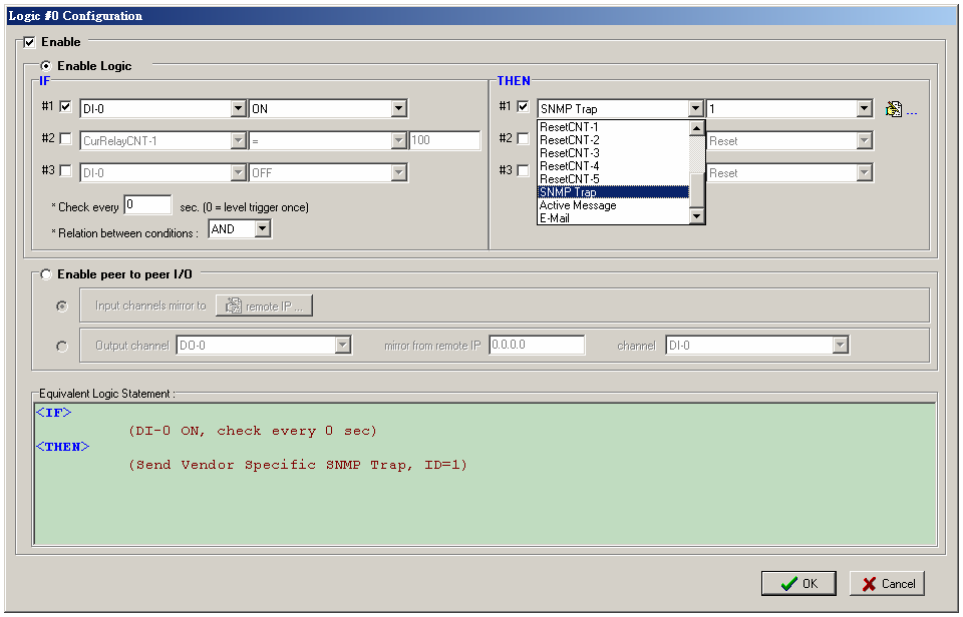
Edge Detection for One Condition

In this scenario, the rule checks DI-0 for a change in status and DI-1 and DI-2 for status only. The repeat interval will not have an effect if the AND relationship is used, because the edge condition for DI-0 can never be sustained over a length of time. With the OR relationship, the IF conditions will be satisfied as long as DI-1 or DI-2 is "on", and the THEN actions will be triggered over interval *N*.

DI-0 = OFF to ON DI-1 = ON DI-2 = ON		
Relation between conditions	AND	OR
"IF" conditions satisfied		
Repeat interval	N/A	"Check every *N* sec"
"THEN" action triggered		

THEN Actions

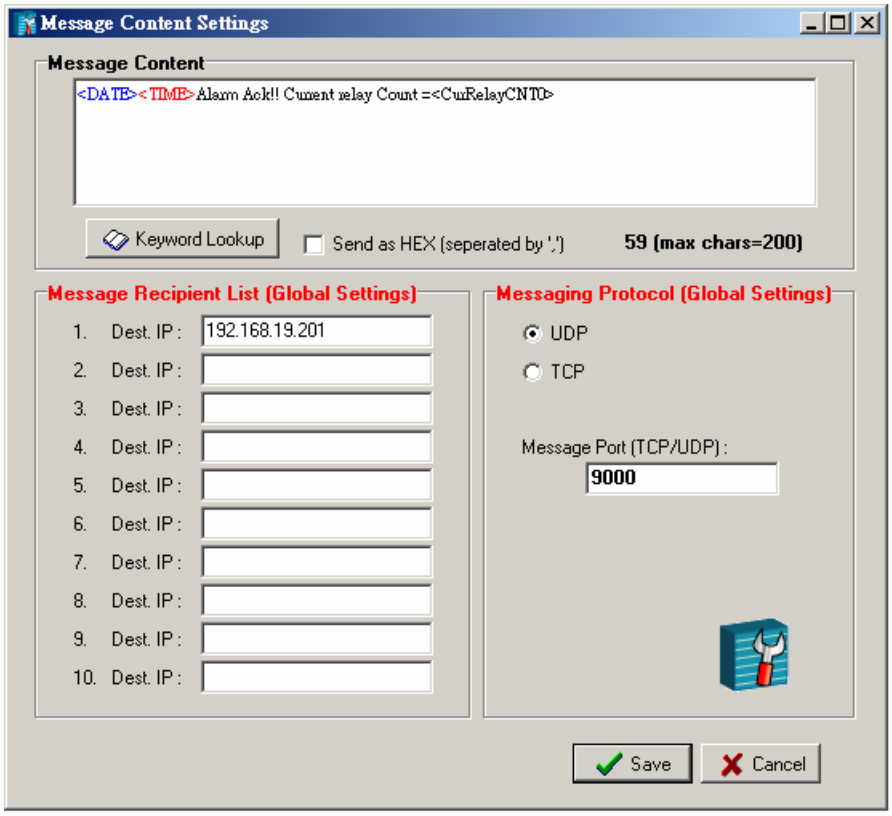
Under the **THEN** column, you can specify up to 3 actions that will be performed when the conditions under the **IF** column are satisfied. Possible actions include changing the status of a DO channel, starting or stopping an Event Counter, or sending a message by SNMP trap, TCP, UDP, or e-mail. For message transmission, click the memo icon (···) to configure additional message parameters.



THEN Actions	Operators	Remark
Counter-*x*	Reset	Depends on DI type
DO-*x*	ON/OFF	Depends on DO type
Pulse Output-*x*	Start/Stop	Depends on DO type
InternalReg-x	TRUE, FALSE	
TimerDelay	STOP, START, RESET	RESET means to restart the counter
SNMP Trap	1 to 20	Details below
Active Message	N/A	Details below
Email	N/A	Details below

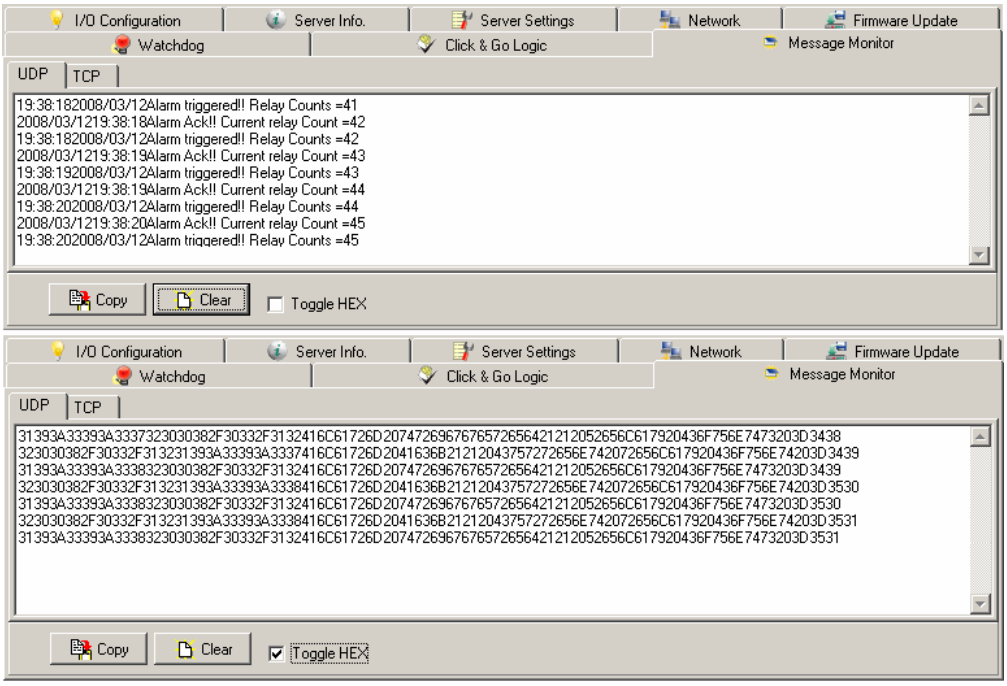
Active Message

The **Active Message** option sends a customized message to one or more IP destinations by TCP or UDP. Click the memo icon to configure the message and parameters. When a message has been triggered, you can view the outgoing message in the Message Monitor tab. In the Message Monitor tab, you can view messages in HEX by selecting **Toggle HEX**.



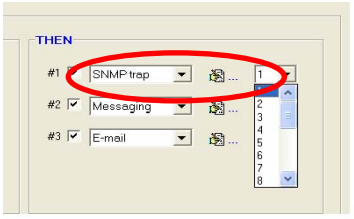
After clicking the memo icon, enter your desired message in the **Message Content** window. You can select TCP or UDP as the messaging protocol, but you must use the same protocol for all Click&Go Logic rules. Dynamic fields such as time, date, IP address, and I/O status can be inserted in your message by clicking **Keyword Lookup**. Up to 10 recipients can be specified in the **Message Receiver list**. The **Message Port** is set to 9000 by default and can be modified as necessary to work with your firewall. Messages are sent in ASCII by default, but can be sent in HEX by selecting **Send as HEX**.

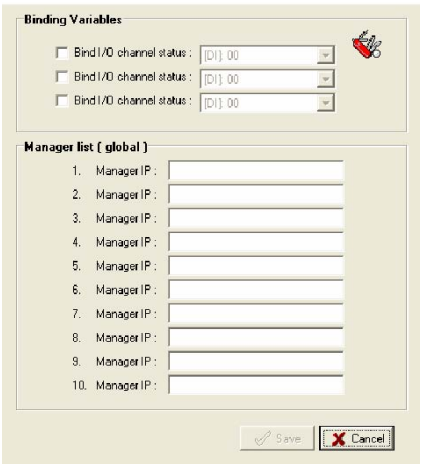
When sending a message in HEX, each HEX value must be delimited by commas. Note that certain numbers are control characters that will not show up in the Message Monitor, as shown in the following example:



SNMP trap

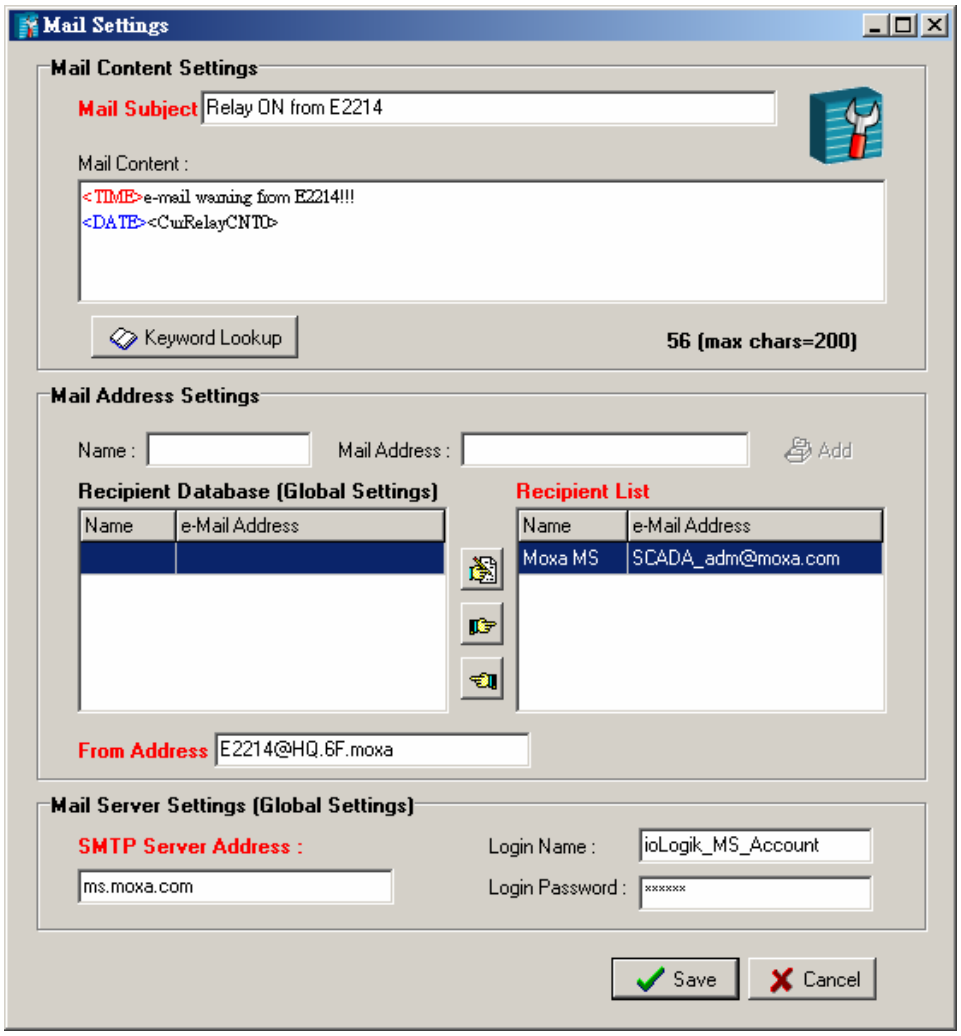
The **SNMP trap** option sends an SNMP trap to one or more IP destinations. You can select a trap number between 1 and 20. (You may need to consult with your network administrator to determine how trap numbers will be used and defined in your network.) Click the memo icon to specify up to 10 recipients for the SNMP trap. You can also bind the status of up to three I/O channels within each trap.





E-mail

The **E-mail** option sends a customizable e-mail to one or more e-mail addresses. Click the memo icon to configure the message and parameters. The following figures show how to set up e-mail warning using ioLogik E2000 series product.



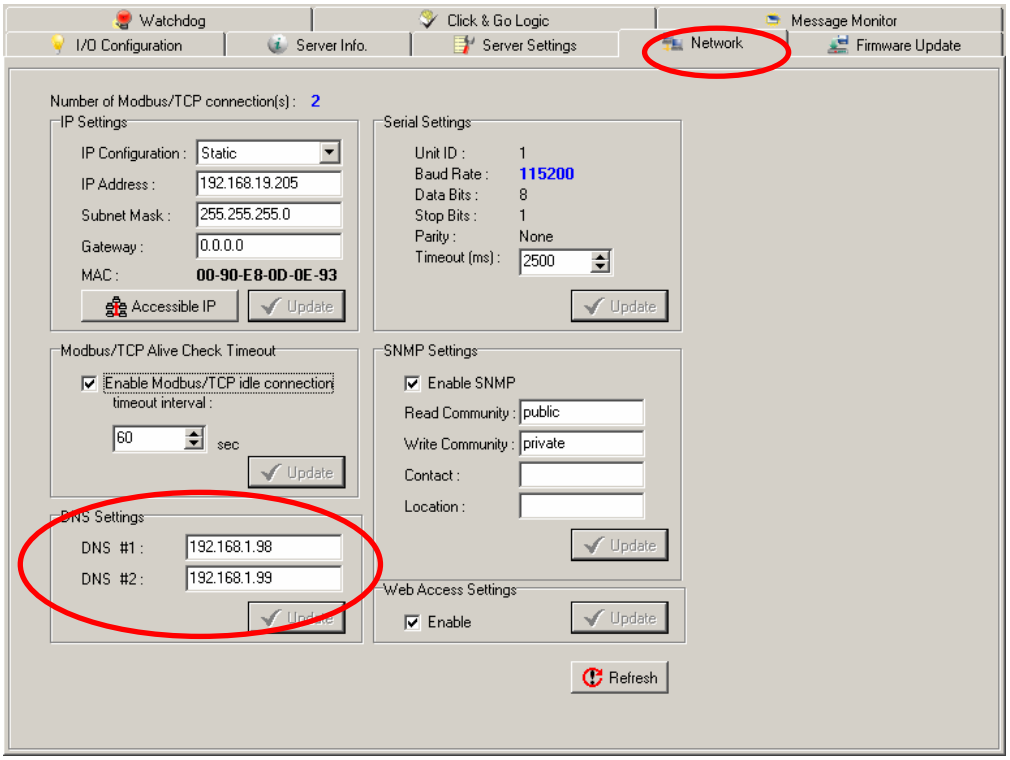
Enter the message content in the **Mail Content** area. Dynamic fields such as time, date, IP address, and I/O status can be inserted in your message by clicking **Keyword Lookup**.

NOTE: Content in the same logic entry can be sent by either Active Message or e-mail, in which case the content of the messages will be the same. If you would like to send an Active Message and e-mail, based on the same event but with different content, you will need to use two separate logic entries, one for the Active Message and one for the e-mail.

If you provided SMTP server information, the **Recipient Database** should contain a list of available e-mail addresses for your network environment. Specify the recipients of the e-mail message by using the finger icons to move addresses to and from the **Recipient List**. The e-mail message will be sent to all addresses listed in the **Receiver(s) list**. You can modify an e-mail address by clicking the memo icon.

To manually add e-mail addresses to the **Available receiver(s) list**, enter the **Name** and **Mail Address** and click **Add**. Once the address has been added to the **Recipient Database**, use the finger icons to move it to or from the **Recipient List**.

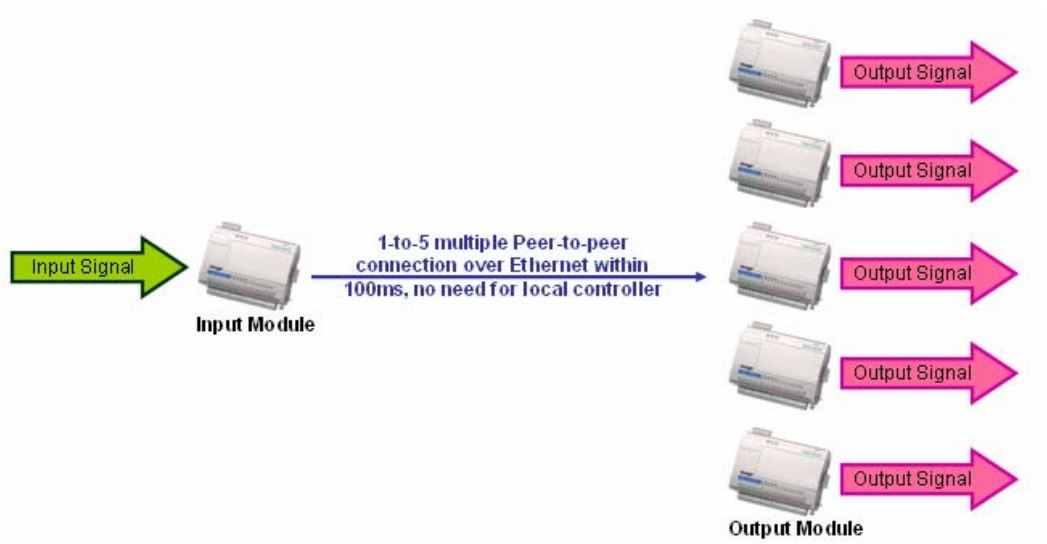
In the **From Address**, enter the e-mail address that recipients will see in the e-mail's From field. Under Mail Server Settings, you must configure the address of the SMTP server with your username and password. When using an FQDN (Fully Qualified Domain Name) address, such as ms.moxa.com, users must specify the DNS settings in the ioLogik.



Defining Peer-to-Peer I/O Rules

Peer-to-peer I/O can be used to set up I/O mapping over Ethernet from a DI channel on one ioLogik to the DO channel on another ioLogik. By using a pair of E2242 products, the input status could be the trigger of a remote output. For example, if a push button is connected to DI channel 0 of ioLogik#1. When the Click&Go peer-to-peer I/O function is activated, the remote ioLogik#2 can turn on or off its DO output channel depending on the status of the remote ioLogik#1. Peer-to-peer I/O makes it easy to set up applications such as controlling a push button and a light located in different rooms, building, or even cities.

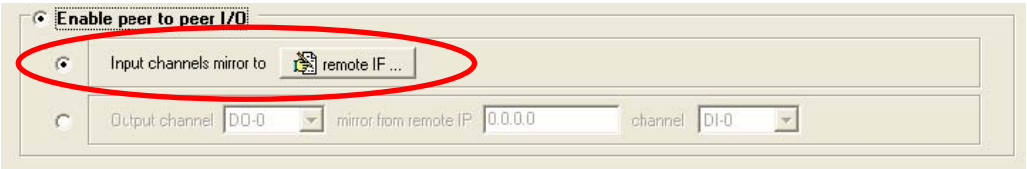
The ioLogik supports peer-to-peer I/O for simple one-to-one mapping as well as one-to-many and many-to-many mapping. A single DI channel can trigger up to five remote DO channels.

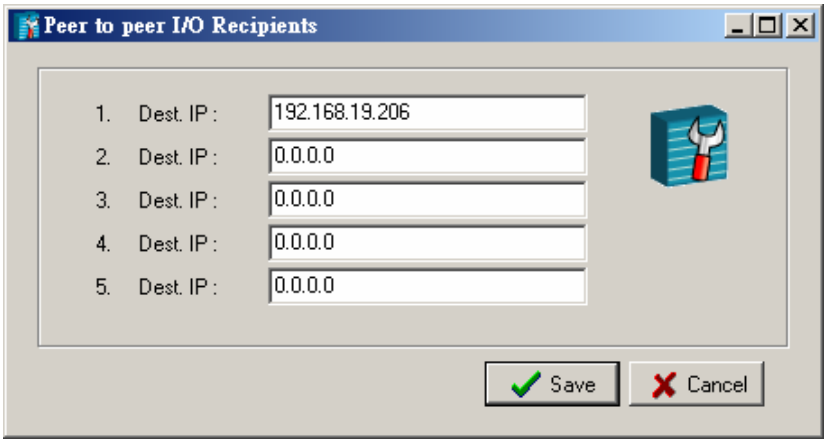


Peer-to-peer I/O function is configured in two steps. On the input module, a Click&Go Logic rule is defined to stream a DI channel's signals to one or more output modules. On the output module, a Click&Go Logic rule is defined to receive an input module's DI channel signals and mirror them on a DO channel.

Configuring Input Module

The peer-to-peer I/O input module is configured using a single Click&Go rule. In the Click&Go tab, start a new rule, select **Enable peer-to-peer I/O**, and then select **Input channels mirror to**. Click **remote IP…** and enter up to five IP addresses as destinations. Each IP address should belong to an ioLogik E2242 unit that will act as an output module for peer-to-peer I/O operation. You can also set up additional peer-to-peer I/O rules in order to mirror input channels to more than five destinations. If all 16 rules are used for peer-to-peer I/O, a total of 80 destination IP addresses can be entered.



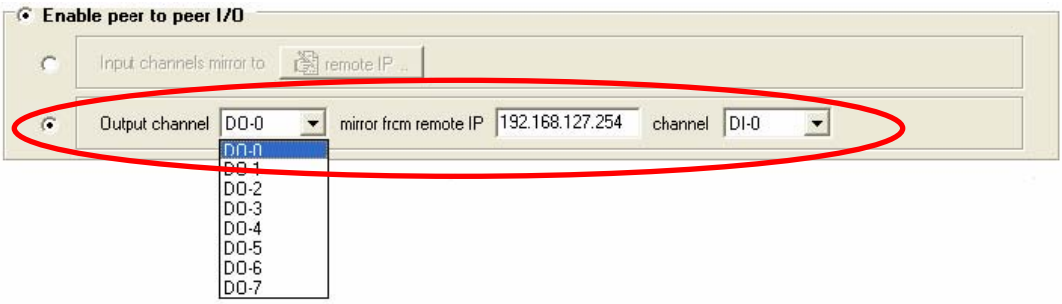


Only DI channels that are set to DI mode can be mirrored on the output module. Peer-to-peer I/O will not function with Event Counter channels.

The ioLogik E2000 can simultaneously act as both an input module and an output module. Input module operation would be configured in one rule, and another rule would be used to configure output module operation.

Configuring Output Module

The peer-to-peer I/O output module is configured using one Click&Go rule for each DO channel that is mirroring a remote DI channel. In the Click&Go tab, start a new rule, select **Enable peer-to-peer I/O**, and then select **Output channel**. Specify the DO channel that will mirror the remote input channel, the IP address of the input module, and the DI channel on the input module whose signals will be mirrored. The input module must have specified the output module's IP address as a destination IP.



When properly configured, the specified DO channel will mirror the signals received by the specified remote DI channel, as if the channels were physically connected. If the remote DI channel's status changes to "on", the specified DO channel's status will change to "on". If the remote DI channel's status changes to "off", the DO channel's status will change to "off".

Only DO channels that are set to DO mode can mirror remote DI channels. Pulse Mode channels cannot be used for peer-to-peer I/O operation.

Once both the input and output modules have been configured, start peer-to-peer I/O operation by activating the rulesets on both units and providing a valid network connection to each unit.

Working with Click&Go Rulesets

Activating the Ruleset

The rules that are displayed in the Click&Go Logic tab comprise the current ruleset, which acts as the brain of your Active Ethernet I/O system. The ruleset must be activated for the ioLogik to commence Active Ethernet I/O operation, as follows:

1. The ruleset must first be downloaded from ioAdmin to the ioLogik E2000. To download the ruleset, click **Download** fron the Ruleset Management bar.
2. After the ruleset has been downloaded, ioAdmin will tip to restart the ioLogik automatically after clicking "yes" to confirm. Do not use the reset button, as that will load all factory defaults and erase your ruleset from memory.

3. After the ioLogik E2000 has been restarted, the ruleset must be activated. After logging into ioAdmin as an administrator, go to the Click&Go Logic tab and click **Run** in the Ruleset Management bar. The rules in the ruleset will now be active.

When the ruleset has been activated, it will remain active even when the ioLogik is disconnected from the host computer or from the network. If the ioLogik is turned off, Active Ethernet I/O operation will resume when it is turned back on. This allows you to use the ioLogik E2000 for PC-independent automation.

Ruleset Management Bar

- **Clear:** This erases the ruleset in both ioAdmin and the ioLogik E2000 series.
- **Retrieve:** This copies the ruleset from the ioLogik E2000 series into ioAdmin.
- **Download:** The copies the ruleset from ioAdmin onto the ioLogik E2000 series.
- **Run:** This activates the ruleset that the ioLogik booted up with.
- **Stop:** This de-activates the Click&Go ruleset and returns the ioLogik to normal, passive operation.

Ruleset Import/Export

The ioLogik's system configuration can be imported and exported. This configuration includes the current ruleset. As you make changes to a ruleset, you can export the system configuration in order to save that ruleset.

Application Examples

Local I/O Control

In this scenario, we planned to trigger the DO from local DI on the ioLogik. Once the ruleset is downloaded onto the ioLogik and activated, the ioLogik handles all processing locally and there is no usage of network or host resources.

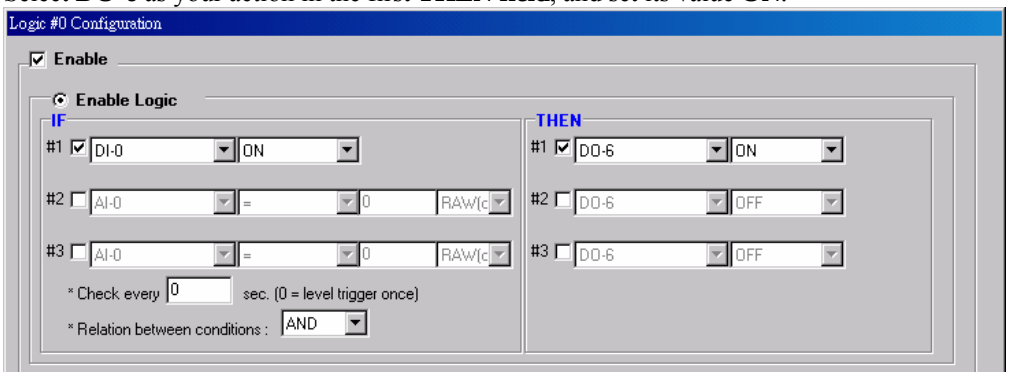
DIO Configuration:
DIO-0 to DIO-5 are configured as digital inputs, DIO-6 to DIO-11 are configured as digital outputs. On the Click&GO settings tab, DIO-0 to DIO-5 will be displayed as DI-0 to DI-5; DIO-6 to DIO-11 will be displayed as DO-6 to DO-11.

Rule 0: IF DI-0=ON, THEN DO-6=ON

Rule 1: IF DI-0=OFF, THEN DO-6=OFF.

1. In ioAdmin, make sure that you have logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The rule configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable Logic**.

5. Select **DI-0** as your condition in the first **IF field**, and set its value to **ON**.
6. Select **DO-6** as your action in the first **THEN field**, and set its value **ON**.



7. Click **OK**.
8. Double click on **#1** in the **Rules List**.
9. Make sure that **Enable** in the upper left hand corner is checked.
10. Select **Enable Logic**.
11. Select **DI-0** as your condition in the first **IF field**, and set its value to **OFF**.
12. Select **DO-6** as your action in the first **THEN field**, and set its value **OFF**.
13. Click **OK** to close the Logic Configuration window.
14. Click **Download** on the Ruleset Management Bar.
15. Select **Yes** when asked to restart and wait until the ioLogik has restarted and is back on-line.
16. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

Active I/O Messages

In this scenario, we have a voltage sensor attached to the AI channel of the ioLogik E2242; a DO channel is connected to a switch on a generator. When the voltage of the battery is low, the ioLogik will trigger the generator to start charging the battery. In the same time, the ioLogik will send a TCP message to the central office, indicating that the generator is ON. When voltage levels become too high, the ioLogik E2242 will shut down the generator by turning off the DO. Another TCP message will then be sent as well. We want the ioLogik to send a TCP message that indicates the exact time the switch is turned on.

I/O Configuration: The DIO-6 is configured as digital outputs and displayed as DO-6 in the Click&GO settings tab. The AI-0 channel is configured to detect 4-20mA where 8mA represents the "LOW" level of the battery voltage and 18mA represents the "HIGH" level.

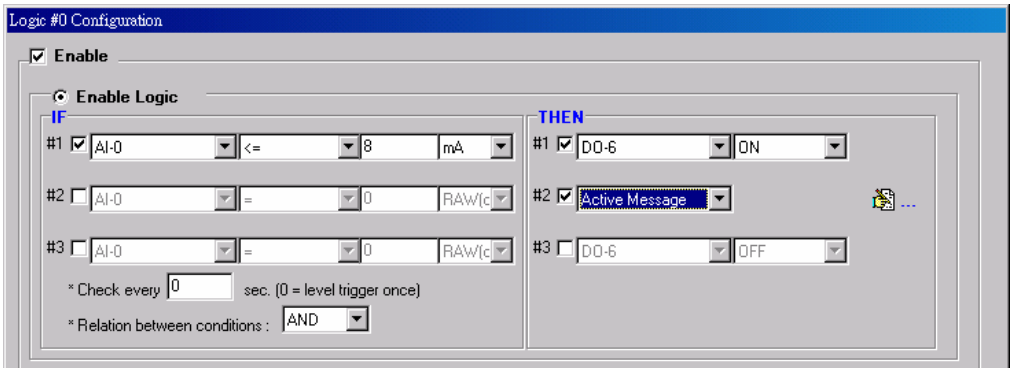
Rule 0: IF AI-0 <= 8 mA, THEN DO-6 = ON

THEN Active Message

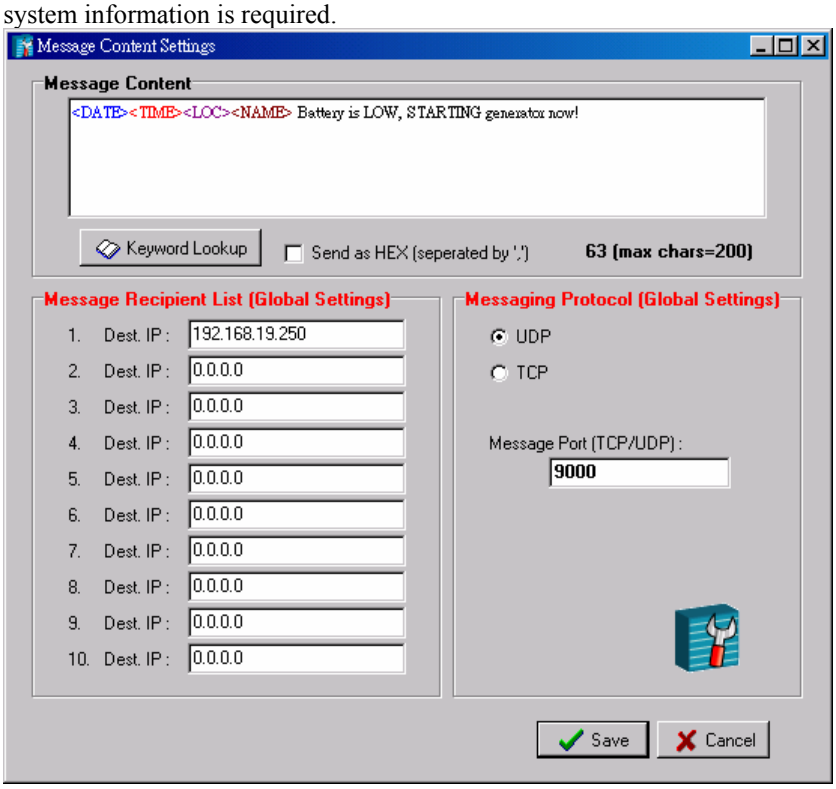
Rule 1: IF AI-0 >= 18 mA, THEN DO-6 = OFF

THEN Active Message

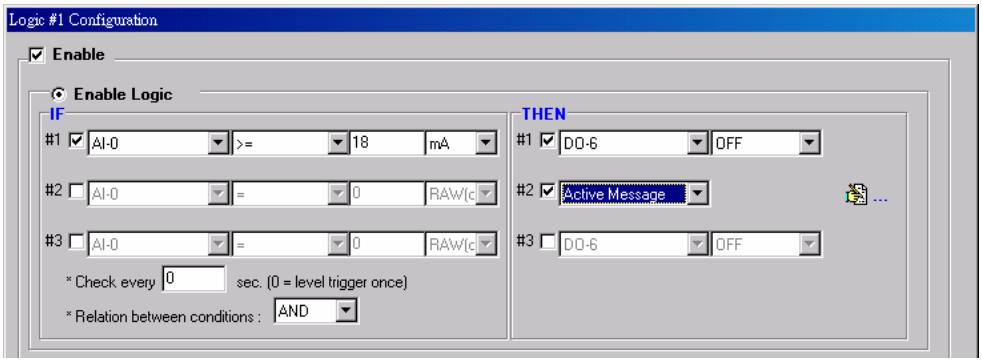
1. In ioAdmin, make sure that you have logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The Logic Configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable Logic**.
5. Select **AI-0** as your condition in the first **IF field**, and set the operator to "<=", value to "8" and the unit to "mA".
6. Select **DO-6** as your action in the first **THEN field**, and set its value to **ON**.
7. Select **Active Message** as your action in the second **THEN field**.



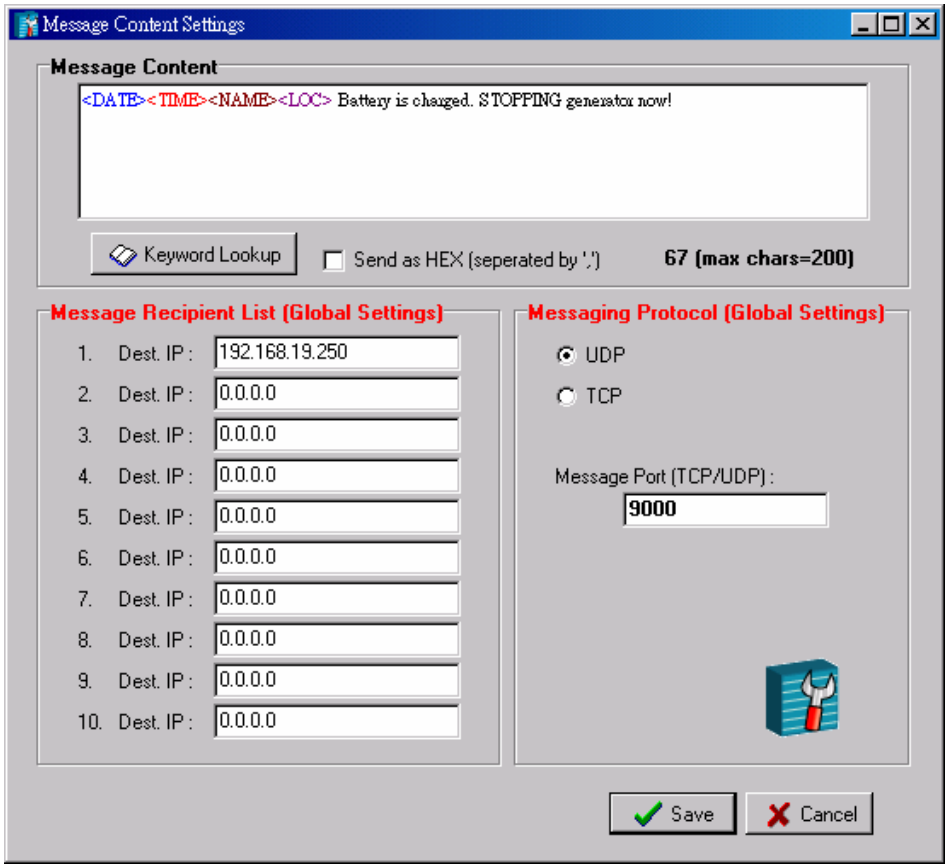
8. Click the memo button. The Message parameters window will appear.
9. Click **Keyword Lookup**. In the Variable List that pops up, click **<Server_time>** or whichever system information is required.



10. Click **OK** to close the Logic Configuration window.
11. Select **AI-0** as your condition in the first **IF field**, and set its operator to ">=", value to "18" and the unit to "mA".
12. Select **DO-0** as your action in the first **THEN field**, and set its value to **OFF**.
13. Select **Active Message** as your action in the second **THEN field**.



14. Click the memo button. The Message parameters window will appear.
15. Click **Keyword Lookup**. In the Variable List that pops up, click **<Server_time>** or whichever system information is required.



16. Click **OK** to close the Logic Configuration window.
17. Click **Download** on the **Ruleset Management Bar**.
18. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
19. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, indicating the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

Event Report by E-mail

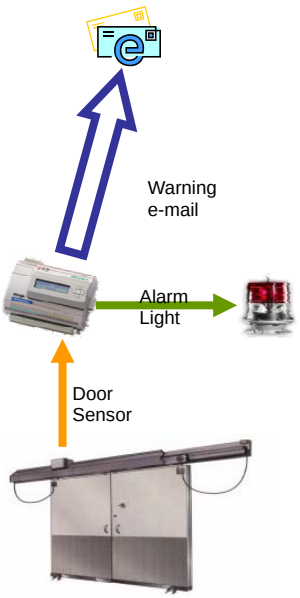
In this case, we are monitoring a door of a large freezer. The door is frequently opened and closed as merchandise comes in and out. A digital sensor is implemented to detect if the door is open or not. When the door has been opened for 60 seconds, the ioLogik E2242 triggers an output to a local alarm light and sends out a warning e-mail at the same time. When the door is closed again, the ioLogik will turn off the alarm light and sent out another e-mail to resolve the situation.

I/O Configuration:
The DIO-0 is configured as a digital input and displayed as DI-0 in the Click&GO settings tab.
The DIO-6 is configured as a digital output and displayed as DO-6 in the Click&GO settings tab.

Freezer Door Open Detection – 60 seconds delay

- Turn on Alarm (DO_6) when Door is open (DI_0) for 60 sec.
- Send an e-mail when Door is open (DI_0) for 60 sec.
- Turn-Off alarm when door is closed
- Send an e-mail when door is closed

#0	**Enabled**	<IF> : (DI-0 ON, check every 0 sec)	<THEN> : (Timer-0 START)
#1	**Enabled**	<IF> : (TIMER-0 TIMEOUT)	<THEN> : (DO-6 = ON) AND (Send E-Mail)
#2	**Enabled**	<IF> : (DI-0 OFF, check every 0 sec)	<THEN> : (DO-6 = OFF) AND (Timer-0 STOP)



Rule 0: IF DI-0=ON, TimerDelay-0 START with interval= 60

Rule 1: IF TimerDelay-0=TIMEOUT, THEN DO-6=ON

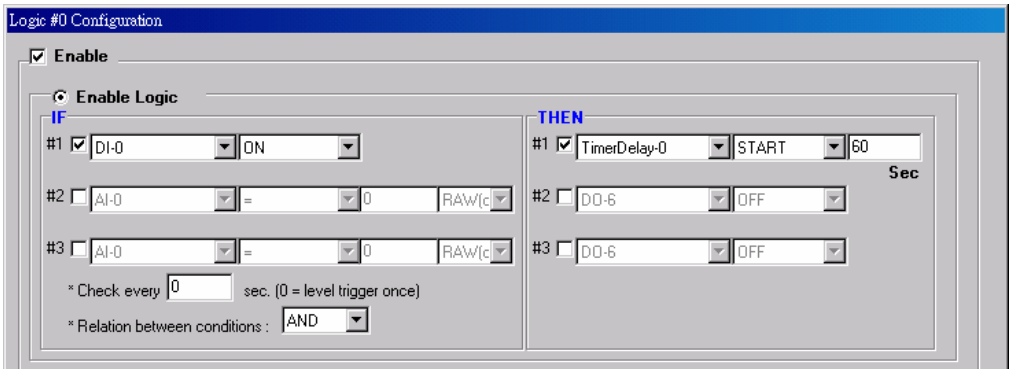
THEN e-mail

Rule 2: IF DI-0=OFF, THEN DO-6=OFF

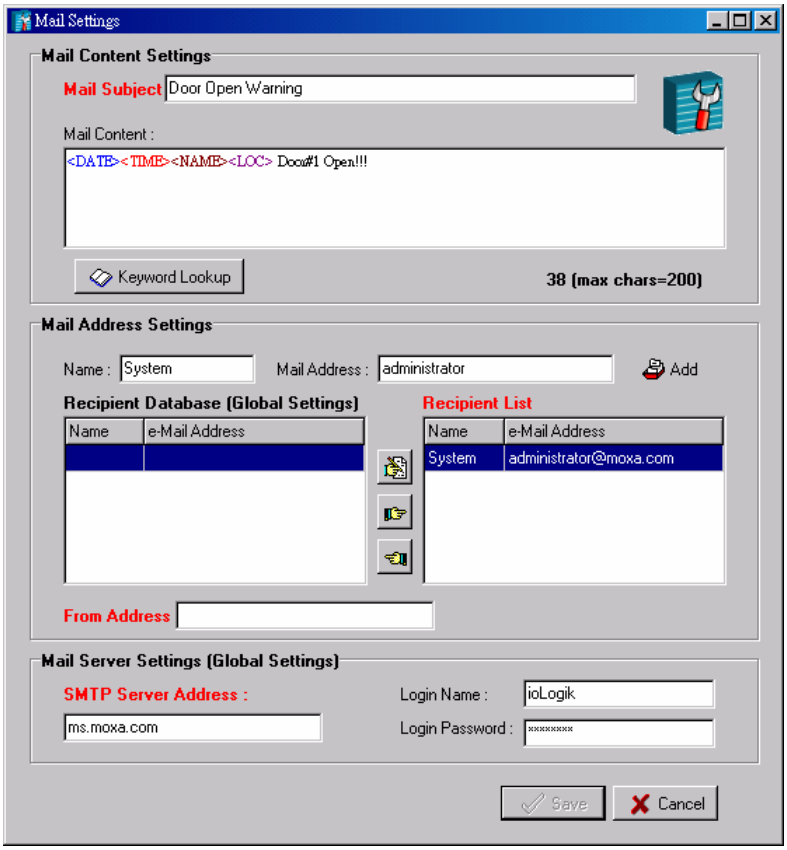
THEN TimerDelay = STOP

THEN e-mail

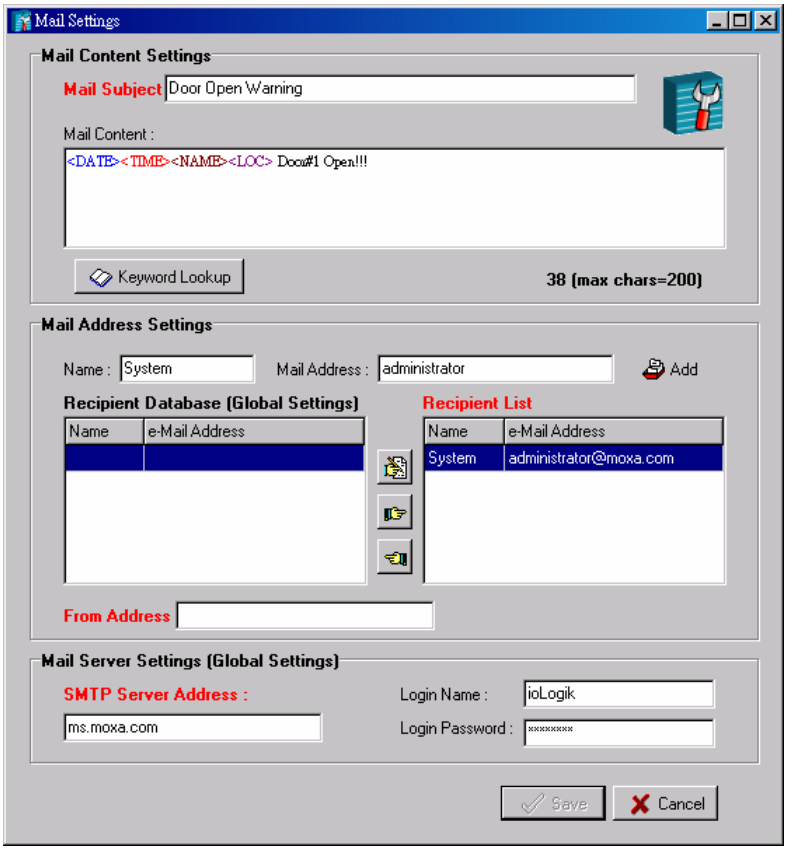
1. In ioAdmin, make sure that you have logged in on the **Server Settings** tab, and then go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The Logic Configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable Logic**.
5. Select **DI-0** as your condition in the first **IF field**, and set its value to **ON**.
6. Select **TimerDelay-0** as your action in the first **THEN field**, and then set its operator to **START**, value to **60**.



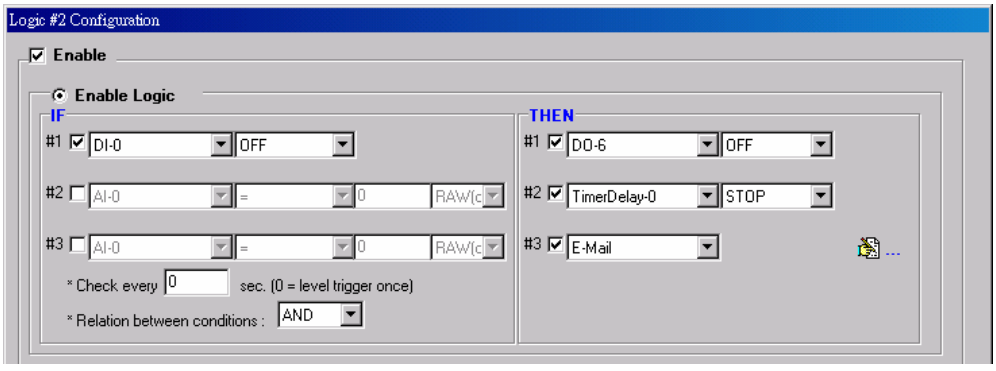
7. Click **Save**. Click **OK** to close the Logic Configuration window.
8. Double click **#1** in the **Rules List**. The Logic Configuration window will appear.
9. Make sure that **Enable** in the upper left hand corner is checked.
10. Select **Enable Logic**.
11. Select **TimerDelay-0** as your condition in the first **IF field**, and then set its operator to **TIMEOUT**.
12. Select **DO-6** as your action in the first **THEN field**, and then set its value to **ON**.
13. Select **E-mail** as your action in the second **THEN field**.



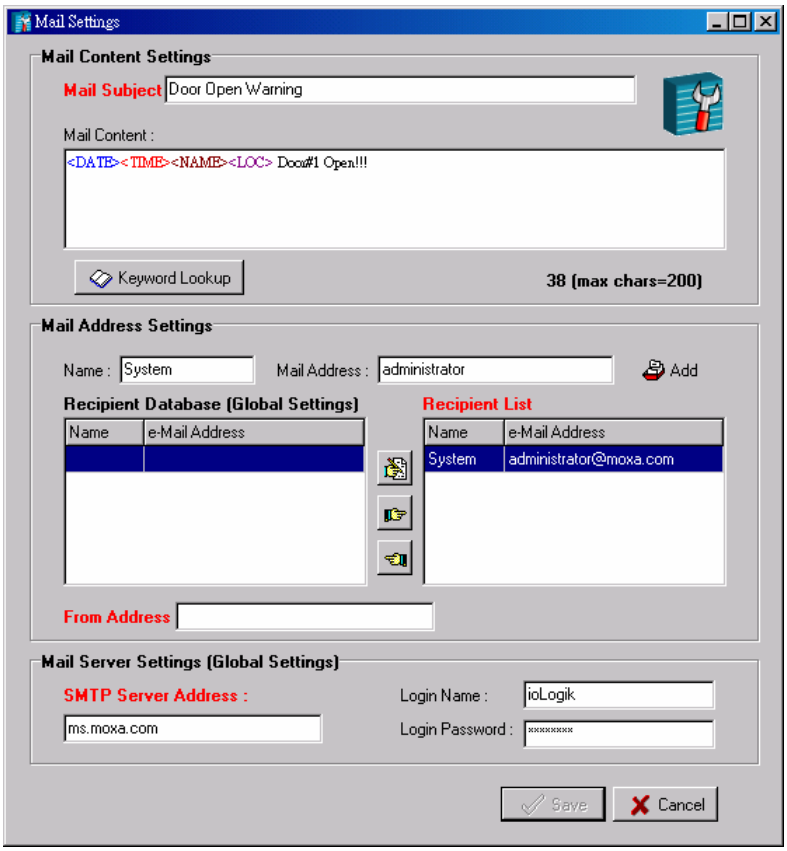
14. Click the memo button. The Mail Settings window will appear.
15. Click **Keyword Lookup**. In the Variable List that pops up, click **<Server_time>** or other system information is required, and then add a description along with these keywords.
16. To edit the rest of the e-mail address/server settings, refer to the E-mail settings in this chapter.



17. Click **Save**. Click **OK** to close the Logic Configuration window.
18. Double click **#2** in the **Rules List**. The Logic Configuration window will appear.
19. Make sure that **Enable** in the upper left hand corner is checked.
20. Select **Enable Logic**.
21. Select **DI-0** as your condition in the first **IF field**, and then set its value to **OFF**.
22. Select **DO-6** as your action in the first **THEN field**, and then set its value to **OFF**.
23. Select **TimerDelay-0** as your action in the second **THEN field**, and then set its operator to **STOP**.
24. Select **E-mail** as your action in the third **THEN field**.



25. Click the memo button. The Mail Settings window will appear.
26. Click **Keyword Lookup**. In the Variable List that pops up, click **<Server_time>** or other system information is required, and then add a description along with these keywords.
27. To edit the rest of the e-mail address/server settings, refer to the E-mail settings in this chapter.



28. Click **Save**. Click **OK** to close the Logic Configuration window.
29. Click **Download** on the Ruleset Management Bar.
30. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
31. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing in green, showing that the ioLogik is now operating as an Active Ethernet I/O server using the ruleset that was just defined.

Remote Output Control When Click&Go is Activated

In this case, we are monitoring the concentration of oxygen in a factory. When the concentration reaches the LOW level, the ioLogik E2242 will turn on the fan and send out a warning e-mail to the system administrator. At the same time, an alarm buzzer is also turned on. The host computer or SCADA system can use the Modbus/TCP address to silence the buzzer remotely by changing the status of the internal register from true to false. Finally the fan stops when the concentration of oxygen goes back to normal.

I/O Configuration:
The DIO-0 is configured as a digital input and displayed as DI-0 in Click&GO settings tab.

The DIO-6 is configured as a digital output and displayed as DO-6 in the Click&GO settings tab.
The DIO-7 is configured as a digital output and displayed as DO-7 in the Click&GO settings tab.

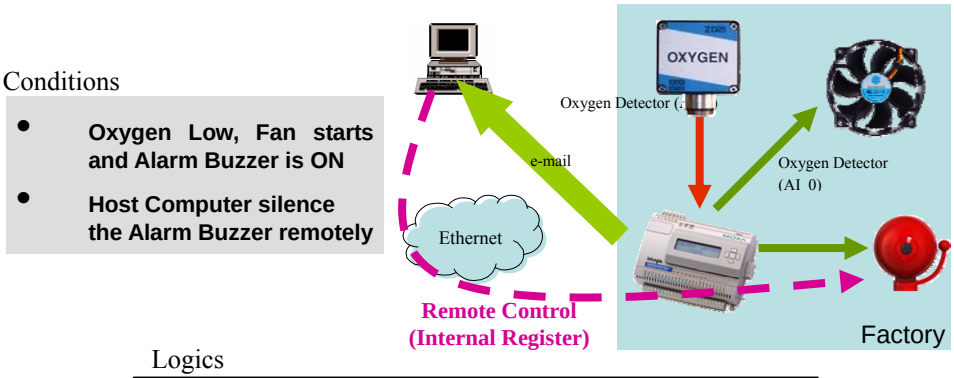
The AI-0 is configured to 4-20 mA where 8mA represents "LOW" level and 15 mA represents the "Normal" oxygen status.

Rule 0: IF AI-0<=8 mA,
THEN DO-6=ON,
THEN DO-7=ON
THEN InternalReg-0=TRUE

Rule 1: IF AI-0<=8 mA,
THEN e-mail

Rule 2: IF AI-0>=15 mA,
THEN DO-6=OFF

Rule 3: IF InternalReg-0=FALSE
THEN DO-7=OFF

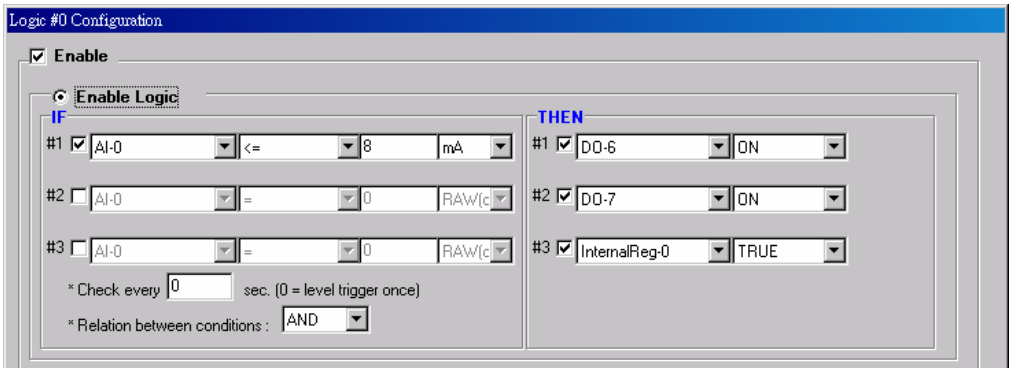


Logics

#0	Enabled	<IF> : (AI-0 <= 8.000 mA, check every 0 sec)	<THEN> : (DO-6 = ON) AND (DO-7 = ON) AND (Internal Register-0 = TRUE)
#1	Enabled	<IF> : (AI-0 <= 8.000 mA, check every 0 sec)	<THEN> : (Send Active Message)
#2	Enabled	<IF> : (AI-0 >= 18.000 mA, check every 0 sec)	<THEN> : (DO-6 = OFF)
#3	Enabled	<IF> : (Internal Register-0 FALSE, check every 0 sec)	<THEN> : (DO-7 = OFF)

1. In ioAdmin, make sure you are logged in on the **Server Settings** tab, and then go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The Logic Configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable Logic**.
5. Select **AI-0** as your condition in the first **IF field**; set its operator to "<=" and value to **8** with **mA** as the unit.

6. Select **DO-6** as your action in the first **THEN field**; set its operator value to **ON**.
7. Select **D0-7** as your action in the second **THEN field**, and then set its value to **ON**.
8. Select **InternalReg-0** as your action in the third **THEN field**, and then set its value to **TRUE**.



9. Click **OK** to close the Logic Configuration window.
10. Double click **#1** in the **Rules List**. The Logic Configuration window will appear.
11. Make sure that **Enable** in the upper left hand corner is checked.
12. Select **Enable Logic**.
13. Select **AI-0** as your condition in the first **IF field**; set its operator to "<=" and value to **8** with **mA** as the unit.
14. Select **E-Mail** as your action in the first **THEN field**.
15. Click the memo button. The Mail Settings window will appear.
16. Refer to the earlier examples to finish the configuration of the e-mail.
17. Click **OK** to close the Logic Configuration window.
18. Double click **#2** in the **Rules List**. The Logic Configuration window will appear.
19. Make sure that **Enable** in the upper left hand corner is checked.
20. Select **Enable Logic**.
21. Select **AI-0** as your condition in the first **IF field**; set its operator to ">=" and value to **15** with **mA** as the unit.
22. Select **DO-6** as your action in the first **THEN field**; set its operator value to **OFF**.
23. Click **OK** to close the Logic Configuration window.
24. Double click **#3** in the **Rules List**. The Logic Configuration window will appear.
25. Make sure that **Enable** in the upper left hand corner is checked.
26. Select **Enable Logic**.
27. Select **InternalReg-0** as your action in the first **IF field**, and then set its value to **FALSE**.
28. Select **DO-7** as your action in the first **THEN field**; set its operator value to **OFF**.
29. Click **OK** to close the Logic Configuration window.
30. Click **Download** on the Ruleset Management Bar.
31. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
32. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing in green, showing that the ioLogik is now operating as an Active Ethernet I/O server using the ruleset that was just defined.

Peer-to-Peer I/O

The peer-to-peer I/O function operates as a mirror that converts and transmits I/O signals over long distances using Ethernet technology. One site of the ioLogik acts as an input and forwards the signal to an output site to avoid noise, extend the communication range, and redirect the signal to multiple destinations.

ATTENTION

Each ioLogik E2000 module is equipped with both input and output channels. Digital inputs can be forwarded only to digital outputs, and analog inputs can only be forwarded to analog outputs. Care must be taken while choosing the ioLogik models and the number of I/O channels.

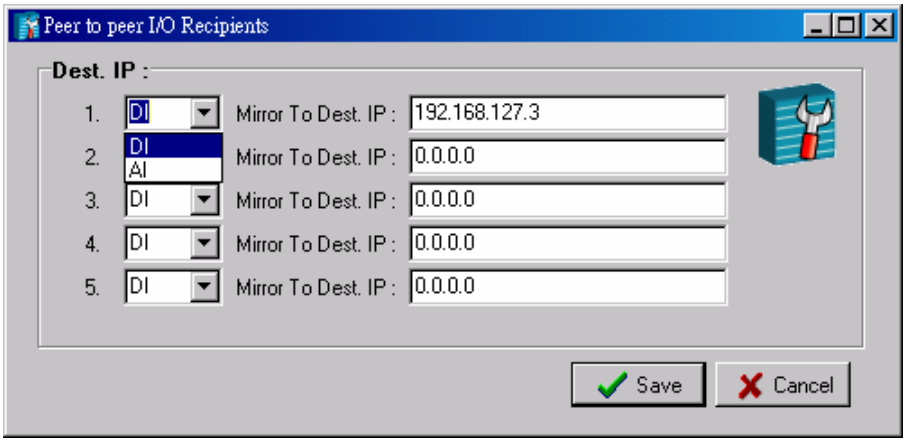
Input Module (ioLogik E2242 192.168.127.154)

I/O Configuration:

The DIO-0 to DIO-5 is configured as a digital input and displayed as DI-0 to DI-5 in the Click&GO settings tab.
The DIO-6 to DIO-11 is configured as a digital output and displayed as DO-6 to DO-11 in the Click&GO settings tab.

Rule 0: Send I/O status to 192.168.127.3

1. In ioAdmin, make sure that you have searched for and selected the correct ioLogik E2242, at IP address 192.168.127.154. Also, make sure you are logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The Logic Configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable peer-to-peer I/O**.
5. Select **Input channels mirror to** and click **remote IP…**
6. Select DI as the type to export the signal from local. In the **1. Dest. IP:** field, enter **192.168.127.3** and click **OK** to save this setting.


Peer to peer I/O Recipients
Dest. IP :
1. DI Mirror To Dest. IP : 192.168.127.3
2. DI AI Mirror To Dest. IP : 0.0.0.0
3. DI Mirror To Dest. IP : 0.0.0.0
4. DI Mirror To Dest. IP : 0.0.0.0
5. DI Mirror To Dest. IP : 0.0.0.0
Save
Cancel

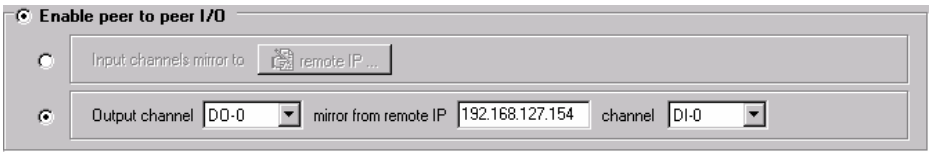
7. Click **OK** to close the Logic Configuration window.
8. Click **Download** on the Ruleset Management Bar.
9. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
10. Log in on the **Server Settings** tab, then go to the **Click&Go Logic** tab.
11. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

Output Module (192.168.127.3)

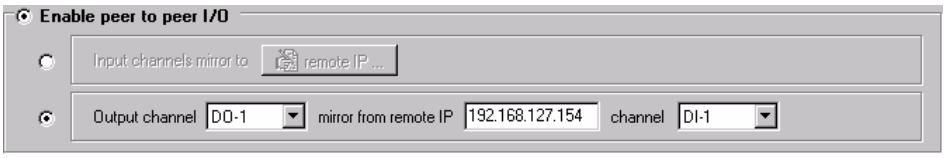
Rule 0: DI-0 at 192.168.127.154 mapped to DO-0

Rule 1: DI-1 at 192.168.127.154 mapped to DO-1

1. In ioAdmin, make sure that you have searched for and selected the correct ioLogik E2242 server, at IP address 192.168.127.3. Also, make sure you are logged in on the **Server Settings** tab. Go to the **Click&Go Logic** tab.
2. Double click **#0** in the **Rules List**. The Logic Configuration window will appear.
3. Make sure that **Enable** in the upper left hand corner is checked.
4. Select **Enable peer-to-peer I/O**.
5. Select **Output channel**, then select **DO-0** for the first field, enter **192.168.127.154** for the second field, and select **DI-0** for the third field.



6. Click **OK** to close the Logic Configuration window.
7. Double click **#1** in the **Rules List**. The Logic Configuration window will appear.
8. Make sure that **Enable** in the upper left hand corner is checked.
9. Select **Enable peer-to-peer I/O**.
10. Select **Output channel**, then select **DO-1** for the first field, enter **192.168.127.154** for the second field, and select **DI-1** for the third field.



11. Click **OK** to close the Logic Configuration window.
12. Click **Download** on the Ruleset Management Bar.
13. Select **Yes** when asked to restart and wait until the server has restarted and is back on-line.
14. Click **Run** on the Ruleset Management Bar. The RDY LED will be flashing green, showing that the ioLogik is now operating as an Active Ethernet I/O server, using the ruleset that was just defined.

A

Liquid Crystal Display Module (LCM)

The ioLogik E2000 supports an optional detachable Liquid Crystal Display Module (LCM) for easier field maintenance. The LCM is hot-pluggable and can be used to configure the network settings or display other settings. When plugged in, the LCM displays the ioLogik "home page," and pressing any button takes you into the settings and configuration.

LCM Controls

The up and down buttons navigate between the current options. The right and left buttons enter and exit the submenus. The center button is used when modifying settings or restarting the server.

Button	Function
Up	go to the previous item
Down	go to the next item
Left	exit the current submenu and return to the previous menu (go up one level)
Right	enter the selected submenu (go down one level)
Center	enter/exit editing mode

An "e" in the upper right hand corner of the display indicates that the parameter can be modified. Press the center button on the LCM to modify that parameter's settings.

LCM Options

Display	Explanation / Actions
<ioLogik E2242>	This is the default "home page" showing the IP address. Press the down button to view the submenus.
<ioLogik E2242> server	Enter this submenu to display information about the specific server you are viewing: ● serial number ● name ● location ● e2242 f/w ver ● lcm f/w ver ● model name

Display	Explanation / Actions
<ioLogik E2242> network	Enter this submenu to display information and settings for the network: ● ethernet link ● mac address ● ip mode ● ip address ● netmask ● gateway ● dns server-1 ● dns server-2
<ioLogik E2242> click&go	Enter this submenu to display information about the Click&Go Logic ruleset currently loaded on the ioLogik: ● name ● status
<ioLogik E2242> serial port	Enter this submenu to display the RS-485 cascade port settings.
<ioLogik E2242> i/o setting	Enter this submenu to access I/O channel status. Here are examples of settings that you might see: ● DI-00 [di]=off ● DO-00 [pulse]=stop Press up or down to navigate through the different I/O channels without having to go back to the previous menu.
<ioLogik E2242> console	Enter this submenu to see if the web console is enabled or disabled.
<ioLogik E2242> ping	Select this option to enter an IP address to ping. If you get a "timeout" error, it indicates that the ioLogik cannot reach that IP address. Otherwise, the display will show the response time.
<ioLogik E2242> save/restart	Enter this submenu to display the restart now submenu. Enter the restart now submenu to display the restart option. Press the center button to modify this option, then select "enable" to save changes and reboot the I/O server. The disable option has no effect.

ATTENTION

Any configuration changes that are made through the LCM will not take effect until the ioLogik is restarted.

B
Modbus/TCP Address Mappings

ioLogik E2242 Modbus Mapping

0xxxx Read/Write Coils (Support Functions 1, 5, 15)// DIO Channel

Reference	Address	Data Type	Description
00001	0x0000	1 bit	CH0 DO Value 0: Off 1: On
00002	0x0001	1 bit	CH1 DO Value 0: Off 1: On
00003	0x0002	1 bit	CH2 DO Value 0: Off 1: On
00004	0x0003	1 bit	CH3 DO Value 0: Off 1: On
00005	0x0004	1 bit	CH4 DO Value 0: Off 1: On
00006	0x0005	1 bit	CH5 DO Value 0: Off 1: On
00007	0x0006	1 bit	CH6 DO Value 0: Off 1: On
00008	0x0007	1 bit	CH7 DO Value 0: Off 1: On
00009	0x0008	1 bit	CH8 DO Value 0: Off 1: On
00010	0x0009	1 bit	CH9 DO Value 0: Off 1: On
00011	0x000A	1 bit	CH10 DO Value 0: Off 1: On
00012	0x000B	1 bit	CH11 DO Value 0: Off 1: On
00013	0x000C	1 bit	CH0 DO Power On Value 0: Off 1: On
00014	0x000D	1 bit	CH1 DO Power On Value 0: Off 1: On
00015	0x000E	1 bit	CH2 DO Power On Value 0: Off 1: On
00016	0x000F	1 bit	CH3 DO Power On Value 0: Off 1: On
00017	0x0010	1 bit	CH4 DO Power On Value 0: Off 1: On
00018	0x0011	1 bit	CH5 DO Power On Value 0: Off 1: On
00019	0x0012	1 bit	CH6 DO Power On Value 0: Off 1: On
00020	0x0013	1 bit	CH7 DO Power On Value 0: Off 1: On
00021	0x0014	1 bit	CH8 DO Power On Value 0: Off 1: On
00022	0x0015	1 bit	CH9 DO Power On Value 0: Off 1: On
00023	0x0016	1 bit	CH10 DO Power On Value 0: Off 1: On
00024	0x0017	1 bit	CH11 DO Power On Value 0: Off 1: On
00025	0x0018	1 bit	CH0 DO Safe Value 0: Off 1: On
00026	0x0019	1 bit	CH1 DO Safe Value 0: Off 1: On
00027	0x001A	1 bit	CH2 DO Safe Value 0: Off 1: On
00028	0x001B	1 bit	CH3 DO Safe Value 0: Off 1: On
00029	0x001C	1 bit	CH4 DO Safe Value 0: Off 1: On
00030	0x001D	1 bit	CH5 DO Safe Value 0: Off 1: On
00031	0x001E	1 bit	CH6 DO Safe Value 0: Off 1: On
00032	0x001F	1 bit	CH7 DO Safe Value 0: Off 1: On
00033	0x0020	1 bit	CH8 DO Safe Value 0: Off 1: On

00034	0x0021	1 bit	CH9 DO Safe Value 0: Off 1: On
00035	0x0022	1 bit	CH10 DO Safe Value 0: Off 1: On
00036	0x0023	1 bit	CH11 DO Safe Value 0: Off 1: On
00037	0x0024	1 bit	CH0 DO Pulse Operate Status 0: Off 1: On
00038	0x0025	1 bit	CH1 DO Pulse Operate Status 0: Off 1: On
00039	0x0026	1 bit	CH2 DO Pulse Operate Status 0: Off 1: On
00040	0x0027	1 bit	CH3 DO Pulse Operate Status 0: Off 1: On
00041	0x0028	1 bit	CH4 DO Pulse Operate Status 0: Off 1: On
00042	0x0029	1 bit	CH5 DO Pulse Operate Status 0: Off 1: On
00043	0x002A	1 bit	CH6 DO Pulse Operate Status 0: Off 1: On
00044	0x002B	1 bit	CH7 DO Pulse Operate Status 0: Off 1: On
00045	0x002C	1 bit	CH8 DO Pulse Operate Status 0: Off 1: On
00046	0x002D	1 bit	CH9 DO Pulse Operate Status 0: Off 1: On
00047	0x002E	1 bit	CH10 DO Pulse Operate Status 0: Off 1: On
00048	0x002F	1 bit	CH11 DO Pulse Operate Status 0: Off 1: On
00049	0x0030	1 bit	CH0 DO PowerOn Pulse Operate Status 0: Off 1: On
00050	0x0031	1 bit	CH1 DO PowerOn Pulse Operate Status 0: Off 1: On
00051	0x0032	1 bit	CH2 DO PowerOn Pulse Operate Status 0: Off 1: On
00052	0x0033	1 bit	CH3 DO PowerOn Pulse Operate Status 0: Off 1: On
00053	0x0034	1 bit	CH4 DO PowerOn Pulse Operate Status 0: Off 1: On
00054	0x0035	1 bit	CH5 DO PowerOn Pulse Operate Status 0: Off 1: On
00055	0x0036	1 bit	CH6 DO PowerOn Pulse Operate Status 0: Off 1: On
00056	0x0037	1 bit	CH7 DO PowerOn Pulse Operate Status 0: Off 1: On
00057	0x0038	1 bit	CH8 DO PowerOn Pulse Operate Status 0: Off 1: On
00058	0x0039	1 bit	CH9 DO PowerOn Pulse Operate Status 0: Off 1: On
00059	0x003A	1 bit	CH10 DO PowerOn Pulse Operate Status 0: Off 1: On
00060	0x003B	1 bit	CH11 DO PowerOn Pulse Operate Status 0: Off 1: On
00061	0x003C	1 bit	CH0 DO Safe Pulse Operate Status 0: Off 1: On
00062	0x003D	1 bit	CH1 DO Safe Pulse Operate Status 0: Off 1: On
00063	0x003E	1 bit	CH2 DO Safe Pulse Operate Status 0: Off 1: On
00064	0x003F	1 bit	CH3 DO Safe Pulse Operate Status 0: Off 1: On
00065	0x0040	1 bit	CH4 DO Safe Pulse Operate Status 0: Off 1: On
00066	0x0041	1 bit	CH5 DO Safe Pulse Operate Status 0: Off 1: On
00067	0x0042	1 bit	CH6 DO Safe Pulse Operate Status 0: Off 1: On
00068	0x0043	1 bit	CH7 DO Safe Pulse Operate Status 0: Off 1: On
00069	0x0044	1 bit	CH8 DO Safe Pulse Operate Status 0: Off 1: On
00070	0x0045	1 bit	CH9 DO Safe Pulse Operate Status 0: Off 1: On
00071	0x0046	1 bit	CH10 DO Safe Pulse Operate Status 0: Off 1: On
00072	0x0047	1 bit	CH11 DO Safe Pulse Operate Status 0: Off 1: On
00073	0x0048	1 bit	CH0 DI Counter Status 0: Off 1: On
00074	0x0049	1 bit	CH1 DI Counter Status 0: Off 1: On
00075	0x004A	1 bit	CH2 DI Counter Status 0: Off 1: On
00076	0x004B	1 bit	CH3 DI Counter Status 0: Off 1: On
00077	0x004C	1 bit	CH4 DI Counter Status 0: Off 1: On
00078	0x004D	1 bit	CH5 DI Counter Status 0: Off 1: On
00079	0x004E	1 bit	CH6 DI Counter Status 0: Off 1: On
00080	0x004F	1 bit	CH7 DI Counter Status 0: Off 1: On

00081	0x0050	1 bit	CH8 DI Counter Status 0: Off 1: On
00082	0x0051	1 bit	CH9 DI Counter Status 0: Off 1: On
00083	0x0052	1 bit	CH10 DI Counter Status 0: Off 1: On
00084	0x0053	1 bit	CH11 DI Counter Status 0: Off 1: On
00085	0x0054	1 bit	CH0 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00086	0x0055	1 bit	CH1 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00087	0x0056	1 bit	CH2 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00088	0x0057	1 bit	CH3 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00089	0x0058	1 bit	CH4 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00090	0x0059	1 bit	CH5 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00091	0x005A	1 bit	CH6 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00092	0x005B	1 bit	CH7 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00093	0x005C	1 bit	CH8 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00094	0x005D	1 bit	CH9 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00095	0x005E	1 bit	CH10 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00096	0x005F	1 bit	CH11 DI Clear Count Value read always: 0 Write: 1 : Clear counter value 0 : return Illegal Data Value
00097	0x0060	1 bit	CH0 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00098	0x0061	1 bit	CH1 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00099	0x0062	1 bit	CH2 DI OverFlow Status

			Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00100	0x0063	1 bit	CH3 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00101	0x0064	1 bit	CH4 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00102	0x0065	1 bit	CH5 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00103	0x0066	1 bit	CH6 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00104	0x0067	1 bit	CH7 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00105	0x0068	1 bit	CH8 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00106	0x0069	1 bit	CH9 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00107	0x006A	1 bit	CH10 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00108	0x006B	1 bit	CH11 DI OverFlow Status Read : 0 : Normal 1 : Overflow Write : 0 : clear overflow status 1 : return Illegal Data Value
00109	0x006C	1 bit	CH0 DI Count Trigger
00110	0x006D	1 bit	CH1 DI Count Trigger

00111	0x006E	1 bit	CH2 DI Count Trigger
00112	0x006F	1 bit	CH3 DI Count Trigger
00113	0x0070	1 bit	CH4 DI Count Trigger
00114	0x0071	1 bit	CH5 DI Count Trigger
00115	0x0072	1 bit	CH6 DI Count Trigger
00116	0x0073	1 bit	CH7 DI Count Trigger
00117	0x0074	1 bit	CH8 DI Count Trigger
00118	0x0075	1 bit	CH9 DI Count Trigger
00119	0x0076	1 bit	CH10 DI Count Trigger
00120	0x0077	1 bit	CH11 DI Count Trigger
00121	0x0078	1 bit	CH0 DI Power On Status 0: Off 1: On
00122	0x0079	1 bit	CH1 DI Power On Status 0: Off 1: On
00123	0x007A	1 bit	CH2 DI Power On Status 0: Off 1: On
00124	0x007B	1 bit	CH3 DI Power On Status 0: Off 1: On
00125	0x007C	1 bit	CH4 DI Power On Status 0: Off 1: On
00126	0x007D	1 bit	CH5 DI Power On Status 0: Off 1: On
00127	0x007E	1 bit	CH6 DI Power On Status 0: Off 1: On
00128	0x007F	1 bit	CH7 DI Power On Status 0: Off 1: On
00129	0x0080	1 bit	CH8 DI Power On Status 0: Off 1: On
00130	0x0081	1 bit	CH9 DI Power On Status 0: Off 1: On
00131	0x0082	1 bit	CH10 DI Power On Status 0: Off 1: On
00132	0x0083	1 bit	CH11 DI Power On Status 0: Off 1: On
00133	0x0084	1 bit	CH0 DI Safe Pulse Operate Status 0: Off 1: On
00134	0x0085	1 bit	CH1 DI Safe Pulse Operate Status 0: Off 1: On
00135	0x0086	1 bit	CH2 DI Safe Pulse Operate Status 0: Off 1: On
00136	0x0087	1 bit	CH3 DI Safe Pulse Operate Status 0: Off 1: On
00137	0x0088	1 bit	CH4 DI Safe Pulse Operate Status 0: Off 1: On
00138	0x0089	1 bit	CH5 DI Safe Pulse Operate Status 0: Off 1: On
00139	0x008A	1 bit	CH6 DI Safe Pulse Operate Status 0: Off 1: On
00140	0x008B	1 bit	CH7 DI Safe Pulse Operate Status 0: Off 1: On
00141	0x008C	1 bit	CH8 DI Safe Pulse Operate Status 0: Off 1: On
00142	0x008D	1 bit	CH9 DI Safe Pulse Operate Status 0: Off 1: On
00143	0x008E	1 bit	CH10 DI Safe Pulse Operate Status 0: Off 1: On
00144	0x008F	1 bit	CH11 DI Safe Pulse Operate Status 0: Off 1: On
00145	0x0090	1 bit	CH0 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00146	0x0091	1 bit	CH1 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00147	0x0092	1 bit	CH2 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00148	0x0093	1 bit	CH3 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF

00149	0x0094	1 bit	CH4 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00150	0x0095	1 bit	CH5 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00151	0x0096	1 bit	CH6 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00152	0x0097	1 bit	CH7 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00153	0x0098	1 bit	CH8 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00154	0x0099	1 bit	CH9 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00155	0x009A	1 bit	CH10 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00156	0x009B	1 bit	CH11 DI set channel Power-off storage enable ON/OFF 1:ON 0:OFF
00157	0x009C	1 bit	DIO 00 1: OUTPUT 0: INPUT (Default: INPUT)
00158	0x009D	1 bit	DIO 01 1: OUTPUT 0: INPUT (Default: INPUT)
00159	0x009E	1 bit	DIO 02 1: OUTPUT 0: INPUT (Default: INPUT)
00160	0x009F	1 bit	DIO 03 1: OUTPUT 0: INPUT (Default: INPUT)
00161	0x00A0	1 bit	DIO 04 1: OUTPUT 0: INPUT (Default: INPUT)
00162	0x00A1	1 bit	DIO 05 1: OUTPUT 0: INPUT (Default: INPUT)
00163	0x00A2	1 bit	DIO 06

			1: OUTPUT 0: INPUT (Default: OUTPUT)
00164	0x00A3	1 bit	DIO 07 1: OUTPUT 0: INPUT (Default: OUTPUT)
00165	0x00A4	1 bit	DIO 08 1: OUTPUT 0: INPUT (Default: OUTPUT)
00166	0x00A5	1 bit	DIO 09 1: OUTPUT 0: INPUT (Default: OUTPUT)
00167	0x00A6	1 bit	DIO 10 1: OUTPUT 0: INPUT (Default: OUTPUT)
00168	0x00A7	1 bit	DIO 11 1: OUTPUT 0: INPUT (Default: OUTPUT)
// AI Channel			
Reference	**Address**	**Data Type**	**Description**
00257	0x0100	1bit	Reset CH0 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00258	0x0101	1bit	Reset CH1 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00259	0x0102	1bit	Reset CH2 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00260	0x0103	1bit	Reset CH3 AI Min Value Read: always 0 Write : 1: reset AI Min value 0: return Illegal Data Value
00265	0x0104	1bit	Reset CH0 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00266	0x0105	1bit	Reset CH1 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00267	0x0106	1bit	Reset CH2 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value
00268	0x0107	1bit	Reset CH3 AI Max Value Read: always 0 Write : 1: reset AI Max value 0: return Illegal Data Value

1xxxx Read Only Coils (Function 2)

Reference	Address	Data Type	Description
10257	0x0100	1 bit	CH0 DI Value
10258	0x0101	1 bit	CH1 DI Value
10259	0x0102	1 bit	CH2 DI Value
10260	0x0103	1 bit	CH3 DI Value
10261	0x0104	1 bit	CH4 DI Value
10262	0x0105	1 bit	CH5 DI Value
10263	0x0106	1 bit	CH6 DI Value
10264	0x0107	1 bit	CH7 DI Value
10265	0x0108	1 bit	CH8 DI Value
10266	0x0109	1 bit	CH9 DI Value
10267	0x010A	1 bit	CH10 DI Value
10268	0x010B	1 bit	CH11 DI Value
10269	0x010C	1 bit	CH0 AI LED 1: On 0: Off
10270	0x010D	1 bit	CH1 AI LED 1: On 0: Off
10271	0x010E	1 bit	CH2 AI LED 1: On 0: Off
10272	0x010F	1 bit	CH3 AI LED 1: On 0: Off

3xxxx Read Only Registers (Function 4)

Reference	Address	Data Type	Description
30001	0x0000	word	CH0 DI Counter Value Hi- Word
30002	0x0001	word	CH0 DI Counter Value Lo- Word
30003	0x0002	word	CH1 DI Counter Value Hi- Word
30004	0x0003	word	CH1 DI Counter Value Lo- Word
30005	0x0004	word	CH2 DI Counter Value Hi- Word
30006	0x0005	word	CH2 DI Counter Value Lo- Word
30007	0x0006	word	CH3 DI Counter Value Hi- Word
30008	0x0007	word	CH3 DI Counter Value Lo- Word
30009	0x0008	word	CH4 DI Counter Value Hi- Word
30010	0x0009	word	CH4 DI Counter Value Lo- Word
30011	0x000A	word	CH5 DI Counter Value Hi- Word
30012	0x000B	word	CH5 DI Counter Value Lo- Word
30013	0x000C	word	CH6 DI Counter Value Hi- Word
30014	0x000D	word	CH6 DI Counter Value Lo- Word
30015	0x000E	word	CH7 DI Counter Value Hi- Word
30016	0x000F	word	CH7 DI Counter Value Lo- Word
30017	0x0010	word	CH8 DI Counter Value Hi- Word
30018	0x0011	word	CH8 DI Counter Value Lo- Word
30019	0x0012	word	CH9 DI Counter Value Hi- Word
30020	0x0013	word	CH9 DI Counter Value Lo- Word
30021	0x0014	word	CH10 DI Counter Value Hi- Word
30022	0x0015	word	CH10 DI Counter Value Lo- Word
30023	0x0016	word	CH11 DI Counter Value Hi- Word

30024	0x0017	word	CH11 DI Counter Value Lo- Word
30025	0x0018	word	CH0 Read AI Value
30026	0x0019	word	CH1 Read AI Value
30027	0x001A	word	CH2 Read AI Value
30028	0x001B	word	CH3 Read AI Value
30033	0x0020	word	CH0 Read AI Min Value
30034	0x0021	word	CH1 Read AI Min Value
30035	0x0022	word	CH2 Read AI Min Value
30036	0x0023	word	CH3 Read AI Min Value
30041	0x0028	word	CH0 Read AI Max Value
30042	0x0029	word	CH1 Read AI Max Value
30043	0x002A	word	CH2 Read AI Max Value
30044	0x002B	word	CH3 Read AI Max Value
312289	0x3000	1 word	CH0 DI Value (low byte)
312290	0x3001	1 word	CH1 DI Value (low byte)
312291	0x3002	1 word	CH2 DI Value (low byte)
312292	0x3003	1 word	CH3 DI Value (low byte)
312293	0x3004	1 word	CH4 DI Value (low byte)
312294	0x3005	1 word	CH5 DI Value (low byte)
312295	0x3006	1 word	CH6 DI Value (low byte)
312296	0x3007	1 word	CH7 DI Value (low byte)
312297	0x3008	1 word	CH8 DI Value (low byte)
312298	0x3009	1 word	CH9 DI Value (low byte)
312299	0x300A	1 word	CH10 DI Value (low byte)
312300	0x300B	1 word	CH11 DI Value (low byte)
System information (read)			
34097	0x1000(4096)	1 word	Vendor ID=0x1393
34098	0x1001(4097)	1 word	Unit ID (Ethernet=1)
34099	0x1002(4098)	1 word	Product Code=0x2242
34100	0x1003	20 word	Vendor name string="Moxa Technologies Inc.," Word 0 Hi byte = 'M'(0x4D) Word 0 Lo byte = 'o' (0x6F) Word 1 Hi byte = 'x' (0x78) Word 1 Lo byte = 'a' (0x61) … Word 10 Hi byte = 'c' Word 10 Lo byte = '.' Word 11 Hi byte = ',' Word 11 Lo byte = '\0' … String ending next byte value is 0
34101	0x1004	20 word	Product name string="E2242 Active Ethernet I/O Server" Word 0 Hi byte = 'E' (0x45) Word 0 Lo byte = '2' (0x32) Word 1 Hi byte = '2' (0x32) Word 1 Lo byte = '4' (0x34) … Word 10 Hi byte = 'v'

			Word 10 Lo byte = 'e' Word 11 Hi byte = 'r' Word 11 Lo byte = '\0' …
34102	0x1005	2 word	Product serial number (decimal), last 5 digits
34103	0x1006	2 word	Firmware revision: Word 0 Hi byte = major (A) Word 0 Lo byte = minor (B) Word 1 Hi byte = release (C) Word 1 Lo byte = build (D) format is A.B.C.D
34104	0x1007	2 word	Firmware release date High word = 0x2006 Low word = 0x1101 firmware release date is Nov. 1, 2006
34105	0x1008	1 word	Number of TCP connected，sum of Modbus/TCP, HTTP, I/O mirror, Remote Command
34106	0x1009	1 word	Ethernet Interface speed, 0x10(10Mbps) or 0x100(100Mbps)
34107	0x100A	3 word	Ethernet physical address(MAC-ID) Word 0 Hi byte = 0 Word 0 Lo byte = 1 Word 1 Hi byte = 2 Word 1 Lo byte =3 Word 2 Hi byte = 4 Word 2 Lo byte = 5 MAC-ID is 00-01-02-03-04-05
34108	0x100B	1 word	LCM detect 0 : No LCM 1 : LCM detected
34109	0x100C	2 word	LCM Firmware revision: Word 0 Hi byte = major (A) Word 0 Lo byte = minor (B) Word 1 Hi byte = release (C) Word 1 Lo byte = build (D) format is A.B.C.D
34111	0x100E	2 word (ULONG)	System Elapsed Time (in sec)
34113	0x1010	1 word	Click&Go Ready to Run Flag
34114	0x1011	16 word	Get DI channels that are locked by Click&Go
34115	0x1012	16 word	Get DO channels that are locked by Click&Go
34116	0x1013	16 word	Get AI channels that are locked by Click&Go
34117	0x1014	2 word	Get Click&Go revision
34118	0x1015	2 word	Get MOS revision
34119	0x1016	1 word	Modbus/RTU Unit ID=1
34120	0x1017	2 word	8051 ADC firmware version (for AIO)
34124	0x101B	1 word	Report DI channel number
34125	0x101C	1 word	Report DO channel number
34126	0x101D	1 word	Report AI channel number

4xxxx Read/Write Registers (Functions 3, 6, 16)

Reference	Address	Data Type	Description
40001	0x0000	1 word	CH0 DO Pulse Output Count Value Hi-Word
40002	0x0001	1 word	CH0 DO Pulse Output Count Value Lo-Word
40003	0x0002	1 word	CH1 DO Pulse Output Count Value Hi-Word
40004	0x0003	1 word	CH1 DO Pulse Output Count Value Lo- Word
40005	0x0004	1 word	CH2 DO Pulse Output Count Value Hi- Word
40006	0x0005	1 word	CH2 DO Pulse Output Count Value Lo- Word
40007	0x0006	1 word	CH3 DO Pulse Output Count Value Hi- Word
40008	0x0007	1 word	CH3 DO Pulse Output Count Value Lo- Word
40009	0x0008	1 word	CH4 DO Pulse Output Count Value Hi- Word
40010	0x0009	1 word	CH4 DO Pulse Output Count Value Lo- Word
40011	0x000A	1 word	CH5 DO Pulse Output Count Value Hi- Word
40012	0x000B	1 word	CH5 DO Pulse Output Count Value Lo- Word
40013	0x000C	1 word	CH6 DO Pulse Output Count Value Hi- Word
40014	0x000D	1 word	CH6 DO Pulse Output Count Value Lo- Word
40015	0x000E	1 word	CH7 DO Pulse Output Count Value Hi- Word
40016	0x000F	1 word	CH7 DO Pulse Output Count Value Lo- Word
40017	0x0010	1 word	CH8 DO Pulse Output Count Value Hi- Word
40018	0x0011	1 word	CH8 DO Pulse Output Count Value Lo- Word
40019	0x0012	1 word	CH9 DO Pulse Output Count Value Hi- Word
40020	0x0013	1 word	CH9 DO Pulse Output Count Value Lo- Word
40021	0x0014	1 word	CH10 DO Pulse Output Count Value Hi- Word
40022	0x0015	1 word	CH10 DO Pulse Output Count Value Lo- Word
40023	0x0016	1 word	CH11 DO Pulse Output Count Value Hi- Word
40024	0x0017	1 word	CH11 DO Pulse Output Count Value Lo- Word
40025	0x0018	1 word	CH0 DO Pulse Low Signal Width Hi- Word
40026	0x0019	1 word	CH0 DO Pulse Low Signal Width Lo- Word
40027	0x001A	1 word	CH1 DO Pulse Low Signal Width Hi- Word
40028	0x001B	1 word	CH1 DO Pulse Low Signal Width Lo- Word
40029	0x001C	1 word	CH2 DO Pulse Low Signal Width Hi- Word
40030	0x001D	1 word	CH2 DO Pulse Low Signal Width Lo- Word
40031	0x001E	1 word	CH3 DO Pulse Low Signal Width Hi- Word
40032	0x001F	1 word	CH3 DO Pulse Low Signal Width Lo- Word
40033	0x0020	1 word	CH4 DO Pulse Low Signal Width Hi- Word
40034	0x0021	1 word	CH4 DO Pulse Low Signal Width Lo- Word
40035	0x0022	1 word	CH5 DO Pulse Low Signal Width Hi- Word
40036	0x0023	1 word	CH5 DO Pulse Low Signal Width Lo- Word
40037	0x0024	1 word	CH6 DO Pulse Low Signal Width Hi- Word
40038	0x0025	1 word	CH6 DO Pulse Low Signal Width Lo- Word
40039	0x0026	1 word	CH7 DO Pulse Low Signal Width Hi- Word
40040	0x0027	1 word	CH7 DO Pulse Low Signal Width Lo- Word
40041	0x0028	1 word	CH8 DO Pulse Low Signal Width Hi- Word
40042	0x0029	1 word	CH8 DO Pulse Low Signal Width Lo- Word
40043	0x002A	1 word	CH9 DO Pulse Low Signal Width Hi- Word
40044	0x002B	1 word	CH9 DO Pulse Low Signal Width Lo- Word
40045	0x002C	1 word	CH10 DO Pulse Low Signal Width Hi- Word

40046	0x002D	1 word	CH10 DO Pulse Low Signal Width Lo- Word
40047	0x002E	1 word	CH11 DO Pulse Low Signal Width Hi- Word
40048	0x002F	1 word	CH11 DO Pulse Low Signal Width Lo- Word
40049	0x0030	1 word	CH0 DO Pulse High Signal Width Hi- Word
40050	0x0031	1 word	CH0 DO Pulse High Signal Width Lo- Word
40051	0x0032	1 word	CH1 DO Pulse High Signal Width Hi- Word
40052	0x0033	1 word	CH1 DO Pulse High Signal Width Lo- Word
40053	0x0034	1 word	CH2 DO Pulse High Signal Width Hi- Word
40054	0x0035	1 word	CH2 DO Pulse High Signal Width Lo- Word
40055	0x0036	1 word	CH3 DO Pulse High Signal Width Hi- Word
40056	0x0037	1 word	CH3 DO Pulse High Signal Width Lo- Word
40057	0x0038	1 word	CH4 DO Pulse High Signal Width Hi- Word
40058	0x0039	1 word	CH4 DO Pulse High Signal Width Lo- Word
40059	0x003A	1 word	CH5 DO Pulse High Signal Width Hi- Word
40060	0x003B	1 word	CH5 DO Pulse High Signal Width Lo- Word
40061	0x003C	1 word	CH6 DO Pulse High Signal Width Hi- Word
40062	0x003D	1 word	CH6 DO Pulse High Signal Width Lo- Word
40063	0x003E	1 word	CH7 DO Pulse High Signal Width Hi- Word
40064	0x003F	1 word	CH7 DO Pulse High Signal Width Lo- Word
40065	0x0040	1 word	CH8 DO Pulse High Signal Width Hi- Word
40066	0x0041	1 word	CH8 DO Pulse High Signal Width Lo- Word
40067	0x0042	1 word	CH9 DO Pulse High Signal Width Hi- Word
40068	0x0043	1 word	CH9 DO Pulse High Signal Width Lo- Word
40069	0x0044	1 word	CH10 DO Pulse High Signal Width Hi- Word
40070	0x0045	1 word	CH10 DO Pulse High Signal Width Lo- Word
40071	0x0046	1 word	CH11 DO Pulse High Signal Width Hi- Word
40072	0x0047	1 word	CH11 DO Pulse High Signal Width Lo- Word
40073	0x0048	1 word	CH0 DO Mode 0: DO 1: Pulse
40074	0x0049	1 word	CH1 DO Mode 0: DO 1: Pulse
40075	0x004A	1 word	CH2 DO Mode 0: DO 1: Pulse
40076	0x004B	1 word	CH3 DO Mode 0: DO 1: Pulse
40077	0x004C	1 word	CH4 DO Mode 0: DO 1: Pulse
40078	0x004D	1 word	CH5 DO Mode 0: DO 1: Pulse
40079	0x004E	1 word	CH6 DO Mode 0: DO 1: Pulse
40080	0x004F	1 word	CH7 DO Mode 0: DO 1: Pulse
40081	0x0050	1 word	CH8 DO Mode 0: DO 1: Pulse
40082	0x0051	1 word	CH9 DO Mode 0: DO 1: Pulse
40083	0x0052	1 word	CH10 DO Mode 0: DO 1: Pulse

40084	0x0053	1 word	CH11 DO Mode 0: DO 1: Pulse
40085	0x0054	1 word	CH0 DI Count Filter
40086	0x0055	1 word	CH1 DI Count Filter
40087	0x0056	1 word	CH2 DI Count Filter
40088	0x0057	1 word	CH3 DI Count Filter
40089	0x0058	1 word	CH4 DI Count Filter
40090	0x0059	1 word	CH5 DI Count Filter
40091	0x005A	1 word	CH6 DI Count Filter
40092	0x005B	1 word	CH7 DI Count Filter
40093	0x005C	1 word	CH8 DI Count Filter
40094	0x005D	1 word	CH9 DI Count Filter
40095	0x005E	1 word	CH10 DI Count Filter
40096	0x005F	1 word	CH11 DI Count Filter
40097	0x0060	1 word	CH0 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40098	0x0061	1 word	CH1 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40099	0x0062	1 word	CH2 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40100	0x0063	1 word	CH3 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40101	0x0064	1 word	CH4 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40102	0x0065	1 word	CH5 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40103	0x0066	1 word	CH6 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40104	0x0067	1 word	CH7 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40105	0x0068	1 word	CH8 DI Mode 0: DI 1: Count Others : return Illegal Data Value

40106	0x0069	1 word	CH9 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40107	0x006A	1 word	CH10 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40108	0x006B	1 word	CH11 DI Mode 0: DI 1: Count Others : return Illegal Data Value
40109	0x006C	1 word	CH0 AI set/get Enable 1:Enable , 0: Disable
40110	0x006D	1 word	CH1 AI set/get Enable 1:Enable , 0: Disable
40111	0x006E	1 word	CH2 AI set/get Enable 1:Enable , 0: Disable
40112	0x006F	1 word	CH3 AI set/get Enable 1:Enable , 0: Disable
40129	0x0080	1 word	CH0 DO set/get wordvalue ; 0: Off 1:On
40130	0x0081	1 word	CH1 DO set/get wordvalue ; 0: Off 1:On
40131	0x0082	1 word	CH2 DO set/get wordvalue ; 0: Off 1:On
40132	0x0083	1 word	CH3 DO set/get wordvalue ; 0: Off 1:On
40133	0x0084	1 word	CH4 DO set/get wordvalue ; 0: Off 1:On
40134	0x0085	1 word	CH5 DO set/get wordvalue ; 0: Off 1:On
40135	0x0086	1 word	CH6 DO set/get wordvalue ; 0: Off 1:On
40136	0x0087	1 word	CH7 DO set/get wordvalue ; 0: Off 1:On
40137	0x0088	1 word	CH8 DO set/get wordvalue ; 0: Off 1:On
40138	0x0089	1 word	CH9 DO set/get wordvalue ; 0: Off 1:On
40139	0x008A	1 word	CH10 DO set/get wordvalue ; 0: Off 1:On
40140	0x008B	1 word	CH11 DO set/get wordvalue ; 0: Off 1:On
40141	0x008C	1 word	CH0 DO set/get poweron wordvalue
40142	0x008D	1 word	CH1 DO set/get poweron wordvalue
40143	0x008E	1 word	CH2 DO set/get poweron wordvalue
40144	0x008F	1 word	CH3 DO set/get poweron wordvalue
40145	0x0090	1 word	CH4 DO set/get poweron wordvalue
40146	0x0091	1 word	CH5 DO set/get poweron wordvalue
40147	0x0092	1 word	CH6 DO set/get poweron wordvalue
40148	0x0093	1 word	CH7 DO set/get poweron wordvalue
40149	0x0094	1 word	CH8 DO set/get poweron wordvalue
40150	0x0095	1 word	CH9 DO set/get poweron wordvalue
40151	0x0096	1 word	CH10 DO set/get poweron wordvalue
40152	0x0097	1 word	CH11 DO set/get poweron wordvalue
40153	0x0098	1 word	CH0 DO set/get safe mode wordvalue
40154	0x0099	1 word	CH1 DO set/get safe mode wordvalue
40155	0x009A	1 word	CH2 DO set/get safe mode wordvalue
40156	0x009B	1 word	CH3 DO set/get safe mode wordvalue
40157	0x009C	1 word	CH4 DO set/get safe mode wordvalue
40158	0x009D	1 word	CH5 DO set/get safe mode wordvalue
40159	0x009E	1 word	CH6 DO set/get safe mode wordvalue
40160	0x009F	1 word	CH7 DO set/get safe mode wordvalue
40161	0x00A0	1 word	CH8 DO set/get safe mode wordvalue
40162	0x00A1	1 word	CH9 DO set/get safe mode wordvalue

40163	0x00A2	1 word	CH10 DO set/get safe mode wordvalue
40164	0x00A3	1 word	CH11 DO set/get safe mode wordvalue
40165	0x00A4	1 word	CH0 DO set/get pwm start wordvalue
40166	0x00A5	1 word	CH1 DO set/get pwm start wordvalue
40167	0x00A6	1 word	CH2 DO set/get pwm start wordvalue
40168	0x00A7	1 word	CH3 DO set/get pwm start wordvalue
40169	0x00A8	1 word	CH4 DO set/get pwm start wordvalue
40170	0x00A9	1 word	CH5 DO set/get pwm start wordvalue
40171	0x00AA	1 word	CH6 DO set/get pwm start wordvalue
40172	0x00AB	1 word	CH7 DO set/get pwm start wordvalue
40173	0x00AC	1 word	CH8 DO set/get pwm start wordvalue
40174	0x00AD	1 word	CH9 DO set/get pwm start wordvalue
40175	0x00AE	1 word	CH10 DO set/get pwm start wordvalue
40176	0x00AF	1 word	CH11 DO set/get pwm start wordvalue
40177	0x00B0	1 word	CH0 DO set/get pwm poweron wordvalue
40178	0x00B1	1 word	CH1 DO set/get pwm poweron wordvalue
40179	0x00B2	1 word	CH2 DO set/get pwm poweron wordvalue
40180	0x00B3	1 word	CH3 DO set/get pwm poweron wordvalue
40181	0x00B4	1 word	CH4 DO set/get pwm poweron wordvalue
40182	0x00B5	1 word	CH5 DO set/get pwm poweron wordvalue
40183	0x00B6	1 word	CH6 DO set/get pwm poweron wordvalue
40184	0x00B7	1 word	CH7 DO set/get pwm poweron wordvalue
40185	0x00B8	1 word	CH8 DO set/get pwm poweron wordvalue
40186	0x00B9	1 word	CH9 DO set/get pwm poweron wordvalue
40187	0x00BA	1 word	CH10 DO set/get pwm poweron wordvalue
40188	0x00BB	1 word	CH11 DO set/get pwm poweron wordvalue
40189	0x00BC	1 word	CH0 DO set/get pwm safe mode wordvalue
40190	0x00BD	1 word	CH1 DO set/get pwm safe mode wordvalue
40191	0x00BE	1 word	CH2 DO set/get pwm safe mode wordvalue
40192	0x00BF	1 word	CH3 DO set/get pwm safe mode wordvalue
40193	0x00C0	1 word	CH4 DO set/get pwm safe mode wordvalue
40194	0x00C1	1 word	CH5 DO set/get pwm safe mode wordvalue
40195	0x00C2	1 word	CH6 DO set/get pwm safe mode wordvalue
40196	0x00C3	1 word	CH7 DO set/get pwm safe mode wordvalue
40197	0x00C4	1 word	CH8 DO set/get pwm safe mode wordvalue
40198	0x00C5	1 word	CH9 DO set/get pwm safe mode wordvalue
40199	0x00C6	1 word	CH10 DO set/get pwm safe mode wordvalue
40200	0x00C7	1 word	CH11 DO set/get pwm safe mode wordvalue
40201	0x00C8	1 word	CH0 DI set/get counter start word
40202	0x00C9	1 word	CH1 DI set/get counter start word
40203	0x00CA	1 word	CH2 DI set/get counter start word
40204	0x00CB	1 word	CH3 DI set/get counter start word
40205	0x00CC	1 word	CH4 DI set/get counter start word
40206	0x00CD	1 word	CH5 DI set/get counter start word
40207	0x00CE	1 word	CH6 DI set/get counter start word
40208	0x00CF	1 word	CH7 DI set/get counter start word
40209	0x00D0	1 word	CH8 DI set/get counter start word
40210	0x00D1	1 word	CH9 DI set/get counter start word
40211	0x00D2	1 word	CH10 DI set/get counter start word

40212	0x00D3	1 word	CH11 DI set/get counter start word
40213	0x00D4	1 word	CH0 DI set/get counter clear word
40214	0x00D5	1 word	CH1 DI set/get counter clear word
40215	0x00D6	1 word	CH2 DI set/get counter clear word
40216	0x00D7	1 word	CH3 DI set/get counter clear word
40217	0x00D8	1 word	CH4 DI set/get counter clear word
40218	0x00D9	1 word	CH5 DI set/get counter clear word
40219	0x00DA	1 word	CH6 DI set/get counter clear word
40220	0x00DB	1 word	CH7 DI set/get counter clear word
40221	0x00DC	1 word	CH8 DI set/get counter clear word
40222	0x00DD	1 word	CH9 DI set/get counter clear word
40223	0x00DE	1 word	CH10 DI set/get counter clear word
40224	0x00DF	1 word	CH11 DI set/get counter clear word
40225	0x00E0	1 word	CH0 DI clear/get overflow word
40226	0x00E1	1 word	CH1 DI clear/get overflow word
40227	0x00E2	1 word	CH2 DI clear/get overflow word
40228	0x00E3	1 word	CH3 DI clear/get overflow word
40229	0x00E4	1 word	CH4 DI clear/get overflow word
40230	0x00E5	1 word	CH5 DI clear/get overflow word
40231	0x00E6	1 word	CH6 DI clear/get overflow word
40232	0x00E7	1 word	CH7 DI clear/get overflow word
40233	0x00E8	1 word	CH8 DI clear/get overflow word
40234	0x00E9	1 word	CH9 DI clear/get overflow word
40235	0x00EA	1 word	CH10 DI clear/get overflow word
40236	0x00EB	1 word	CH11 DI clear/get overflow word
40237	0x00EC	1 word	CH0 DI set/get trigger word
40238	0x00ED	1 word	CH1 DI set/get trigger word
40239	0x00EE	1 word	CH2 DI set/get trigger word
40240	0x00EF	1 word	CH3 DI set/get trigger word
40241	0x00F0	1 word	CH4 DI set/get trigger word
40242	0x00F1	1 word	CH5 DI set/get trigger word
40243	0x00F2	1 word	CH6 DI set/get trigger word
40244	0x00F3	1 word	CH7 DI set/get trigger word
40245	0x00F4	1 word	CH8 DI set/get trigger word
40246	0x00F5	1 word	CH9 DI set/get trigger word
40247	0x00F6	1 word	CH10 DI set/get trigger word
40248	0x00F7	1 word	CH11 DI set/get trigger word
40249	0x00F8	1 word	CH0 DI set/get power on start word
40250	0x00F9	1 word	CH1 DI set/get power on start word
40251	0x00FA	1 word	CH2 DI set/get power on start word
40252	0x00FB	1 word	CH3 DI set/get power on start word
40253	0x00FC	1 word	CH4 DI set/get power on start word
40254	0x00FD	1 word	CH5 DI set/get power on start word
40255	0x00FE	1 word	CH6 DI set/get power on start word
40256	0x00FF	1 word	CH7 DI set/get power on start word
40257	0x0100	1 word	CH8 DI set/get power on start word
40258	0x0101	1 word	CH9 DI set/get power on start word
40259	0x0102	1 word	CH10 DI set/get power on start word
40260	0x0103	1 word	CH11 DI set/get power on start word

40261	0x0104	1 word	CH0 DI set/get safe start word
40262	0x0105	1 word	CH1 DI set/get safe start word
40263	0x0106	1 word	CH2 DI set/get safe start word
40264	0x0107	1 word	CH3 DI set/get safe start word
40265	0x0108	1 word	CH4 DI set/get safe start word
40266	0x0109	1 word	CH5 DI set/get safe start word
40267	0x010A	1 word	CH6 DI set/get safe start word
40268	0x010B	1 word	CH7 DI set/get safe start word
40269	0x010C	1 word	CH8 DI set/get safe start word
40270	0x010D	1 word	CH9 DI set/get safe start word
40271	0x010E	1 word	CH10 DI set/get safe start word
40272	0x010F	1 word	CH11 DI set/get safe start word
40273	0x0110	1 word	CH0 Power-off storage enable
40274	0x0111	1 word	CH1 Power-off storage enable
40275	0x0112	1 word	CH2 Power-off storage enable
40276	0x0113	1 word	CH3 Power-off storage enable
40277	0x0114	1 word	CH4 Power-off storage enable
40278	0x0115	1 word	CH5 Power-off storage enable
40279	0x0116	1 word	CH6 Power-off storage enable
40280	0x0117	1 word	CH7 Power-off storage enable
40281	0x0118	1 word	CH8 Power-off storage enable
40282	0x0119	1 word	CH9 Power-off storage enable
40283	0x011A	1 word	CH10 Power-off storage enable
40284	0x011B	1 word	CH11 Power-off storage enable
40285	0x011C	1 word	AI Channel 0 Scaling Enable
40286	0x011D	1 word	AI Channel 1 Scaling Enable
40287	0x011E	1 word	AI Channel 2 Scaling Enable
40288	0x011F	1 word	AI Channel 3 Scaling Enable
40289	0x0120	1 word	AI Channel 0 RAW Min Value
40290	0x0121	1 word	AI Channel 1 RAW Min Value
40291	0x0122	1 word	AI Channel 2 RAW Min Value
40292	0x0123	1 word	AI Channel 3 RAW Min Value
40293	0x0124	1 word	AI Channel 0 RAW Max Value
40294	0x0125	1 word	AI Channel 1 RAW Max Value
40295	0x0126	1 word	AI Channel 2 RAW Max Value
40296	0x0127	1 word	AI Channel 3 RAW Max Value
40297	0x0128	1 word	AI Channel 0 Scale Min Value
40298	0x0129	1 word	AI Channel 1 Scale Min Value
40299	0x012A	1 word	AI Channel 2 Scale Min Value
40300	0x012B	1 word	AI Channel 3 Scale Min Value
40301	0x012C	1 word	AI Channel 0 Scale Max Value
40302	0x012D	1 word	AI Channel 1 Scale Max Value
40303	0x012E	1 word	AI Channel 2 Scale Max Value
40304	0x012F	1 word	AI Channel 3 Scale Max Value
40305	0x0130	1 word	AI Channel 0 Scale Value Hi-Word (float)
40306	0x0131	1 word	AI Channel 0 Scale Value Lo-Word (float)
40307	0x0132	1 word	AI Channel 1 Scale Value Hi-Word (float)
40308	0x0133	1 word	AI Channel 1 Scale Value Lo-Word (float)
40309	0x0134	1 word	AI Channel 2 Scale Value Hi-Word (float)

40310	0x0135	1 word	AI Channel 2 Scale Value Lo-Word (float)
40311	0x0136	1 word	AI Channel 3 Scale Value Hi-Word (float)
40312	0x0137	1 word	AI Channel 3 Scale Value Lo-Word (float)
40337	0x0150	1 word	Internal Register 00 Value
40338	0x0151	1 word	Internal Register 01 Value
40339	0x0152	1 word	Internal Register 02 Value
40340	0x0153	1 word	Internal Register 03 Value
40341	0x0154	1 word	Internal Register 04 Value
40342	0x0155	1 word	Internal Register 05 Value
40343	0x0156	1 word	Internal Register 06 Value
40344	0x0157	1 word	Internal Register 07 Value
40345	0x0158	1 word	Internal Register 08 Value
40346	0x0159	1 word	Internal Register 09 Value
40347	0x015A	1 word	Internal Register 10 Value
40348	0x015B	1 word	Internal Register 11 Value
40349	0x015C	1 word	Internal Register 12 Value
40350	0x015D	1 word	Internal Register 13 Value
40351	0x015E	1 word	Internal Register 14 Value
40352	0x015F	1 word	Internal Register 15 Value
40353	0x0160	1 word	Internal Register 16 Value
40354	0x0161	1 word	Internal Register 17 Value
40355	0x0162	1 word	Internal Register 18 Value
40356	0x0163	1 word	Internal Register 19 Value
40357	0x0164	1 word	Internal Register 20 Value
40358	0x0165	1 word	Internal Register 21 Value
40359	0x0166	1 word	Internal Register 22 Value
40360	0x0167	1 word	Internal Register 23 Value
Reference	**Address**	**Data Type**	**Description**
40513	0x0200	1 word	CH0 AI Range 00 : +/-150mV 01: +/-500mV 02: +/-5V 03: +/-10V 04: 0-20mA 05: 4-20mA 06 : 0 -150mV 07 : 0 - 500mV 08: 0 - 5V 09: 0 -10V Others: return Illegal Data Value
40514	0x0201	1 word	CH1 AI Range 00 : +/-150mV 01: +/-500mV 02: +/-5V 03: +/-10V 04: 0-20mA 05: 4-20mA 06 : 0 -150mV 07 : 0 - 500mV

			08: 0 - 5V 09: 0 -10V Others: return Illegal Data Value
40515	0x0202	1 word	CH2 AI Range 00: +/-150mV 01: +/-500mV 02: +/-5V 03: +/-10V 04: 0-20mA 05: 4-20mA 06 : 0 -150mV 07 : 0 - 500mV 08: 0 - 5V 09: 0 -10V Others: return Illegal Data Value
40516	0x0203	1 word	CH3 AI Range 00 : +/-150mV 01: +/-500mV 02: +/-5V 03: +/-10V 04: 0-20mA 05: 4-20mA 06 : 0 -150mV 07 : 0 - 500mV 08: 0 - 5V 09: 0 -10V Others: return Illegal Data Value
System information (R/W)			
41000	0x03E8 (1000)	1 word	Load default setting, data=0x0078
44097	0x1000	2 word	IP address (need reboot) Word 0 Hi byte = 192 (0xC0) Word 0 Lo byte = 168 (0xA8) Word 1 Hi byte = 15 (0x0F) Word 1 Lo byte = 1 (0x01) IP address is "192.168.15.1"
44098	0x1001	2 word	Subnet mask (need reboot) Word 0 Hi byte = 255 Word 0 Lo byte = 255 Word 1 Hi byte = 255 Word 1 Lo byte = 0 Subnet mask is "255.255.255.0"
44099	0x1002	2 word	Geteway (need reboot) Word 0 Hi byte = 192 Word 0 Lo byte = 168 Word 1 Hi byte = 15 Word 1 Lo byte = 1 Geteway is "192.168.15.1"
44100	0x1003	1 word	Timeout for idle TCP/IP connection In sec
44101	0x1004	6 word	System Local Time:

			Word 0= Sec: 00-59 Word 1= Min: 00-59 Word 2= Hour: 00-23 Word 3= Day: 01-31 Word 4= Month: 01-12 Word 5= Year: 2000-2099
44102	0x1005	1 word	System Local Time zone (1 ~ 63), refer to appendix time zone code.
44103	0x1006	20 word	System Time Server Address Word 0 Hi byte = 192 Word 0 Lo byte = 168 Word 1 Hi byte = 15 Word 1 Lo byte = 1 Time Server Address is "192.168.15.1"
44104	0x1007	2 word	DNS Server 1 IP Address Word 0 Hi byte = 192 Word 0 Lo byte = 168 Word 1 Hi byte = 15 Word 1 Lo byte = 1 DNS Server 1 IP="192.168.15.1"
44105	0x1008	2 word	DNS Server 2 IP Address Word 0 Hi byte = 192 Word 0 Lo byte = 168 Word 1 Hi byte = 15 Word 1 Lo byte = 1 DNS Server 2 IP="192.168.15.1"
44106	0x1009	1 word	Allow Web Access 1=Enable, 0=Disable
44107	0x100A	30 word	Module Location String (Terminated by '\0')
44108	0x100B	30 word	Module Description String (Terminated by '\0')
44109	0x100C	5 word	Module Password String (Terminated by '\0')
44110	0x100D	1 word	External Uart Packet RW Timeout Interval (in ms)
44111	0x100E	1 word	Lost Host Connection Timeout Interval (Will enter safe mode if timeout once occured)
44112	0x100F	1 word	Lost Host Connection Timeout Flag 1=Set, 0=Clear
44113	0x1010	1 word	SNMP Enable
44114	0x1011	10 word	SNMP Read Community Name String
44115	0x1012	10 word	SNMP Contact String
44116	0x1013	10 word	SNMP Location String
44117	0x1014	10 word	SNMP RW Community Name String
44118	0x1015	20 word	SNMP Manager IP0 (Server Name or IP String)
44119	0x1016	20 word	SNMP Manager IP1 (Server Name or IP String)

44120	0x1017	20 word	SNMP Manager IP2 (Server Name or IP String)
44121	0x1018	20 word	SNMP Manager IP3 (Server Name or IP String)
44122	0x1019	20 word	SNMP Manager IP4 (Server Name or IP String)
44123	0x101A	20 word	SNMP Manager IP5 (Server Name or IP String)
44124	0x101B	20 word	SNMP Manager IP6 (Server Name or IP String)
44125	0x101C	20 word	SNMP Manager IP7 (Server Name or IP String)
44126	0x101D	20 word	SNMP Manager IP8 (Server Name or IP String)
44127	0x101E	20 word	SNMP Manager IP9 (Server Name or IP String)
44128	0x101F	1 word	IP Configuration Type
44129	0x1020	1 word	IP Filter Global Enable Flag
44130	0x1021	10 word	IP Filter Enable (all entries)
44131	0x1022	20 word	IP Filter Address (all entries)
44132	0x1023	20 word	IP Filter Mask (all entries)

5xxxx Write Registers (Function 8)

Sub-function	Data Field (Request)	Data Field (Response)	Description
0x0001	0xFF00	Echo Request Data	Reboot
0x0001	0x55AA	Echo Request Data	Reset with Factory default

C
Used Network Port Numbers

ioLogik E2242 Network Port Usage

Port	Type	Usage
68	UDP	BOOTPC
68	UDP	DHCP
69	UDP	Export/import file
80	TCP	Web Server
161	TCP	SNMP
502	TCP	Modbus Communication
4800	UDP	Auto search
9020	TCP	Peer-to-Peer function
9000	TCP	Active Message (Default)
9000	UDP	Active Message (Default)
4040	TCP	ioEventLog

D

SNMP Agents with MIB II, RS-232-like Groups

RFC1213 MIB II Supported SNMP Variables

The following SNMP variables are built into the ioLogik firmware and are compliant with RFC1213 MIB II.

System MIB	Interfaces MIB	IP MIB	ICMP MIB
SysDescr	ifNumber	ipForwarding	IcmpInMsgs
SysObjectID	ifIndex	ipDefaultTTL	IcmpInErrors
SysUpTime	ifDescr	ipInreceives	IcmpInDestUnreachs
SysContact	ifType	ipInHdrErrors	IcmpInTimeExcds
SysName	ifMtu	ipInAddrErrors	IcmpInParmProbs
SysLocation	ifSpeed	ipForwDatagrams	IcmpInSrcQuenchs
SysServices	ifPhysAddress	ipInUnknownProtos	IcmpInRedirects
SysServices	ifAdminStatus	ipInDiscards	IcmpInEchos
	ifOperStatus	ipInDelivers	IcmpInEchoReps
	ifLastChange	ipOutRequests	IcmpInTimestamps
	ifInOctets	ipOutDiscards	IcmpTimestampReps
	ifInUcastPkts	ipOutNoRoutes	IcmpInAddrMasks
	ifInNUcastPkts	ipReasmTimeout	IcmpOutMsgs
	ifInDiscards	ipReasmReqds	IcmpOutErrors
	ifInErrors	ipReasmOKs	IcmpOutDestUnreachs

Interfaces MIB	IP MIB	ICMP MIB
ifInUnknownProtos	ipReasmFails	IcmpOutTimeExcds
ifOutOctets	ipFragOKs	IcmpOutParmProbs
ifOutUcastPkts	ipFragFails	IcmpOutSrcQuenchs
ifOutNUcastPkts	ipFragCreates	IcmpOutRedirects
ifOutDiscards	ipAdEntAddr	IcmpOutEchos
ifOutErrors	ipAdEntIfIndex	IcmpOutEchoReps
ifOutQLen	ipAdEntNetMask	IcmpOutTimestamps
ifSpecific	ipAdEntBcastAddr	IcmpOutTimestampReps
	ipAdEntReasmMaxSize	IcmpOutAddrMasks
	ipRouteDest	IcmpOutAddrMaskReps
	ipRouteIfIndex	
	ipRouteMetric1	
	ipRouteMetric2	
	ipRouteMetric3	
	ipRouteMetric4	
	ipRouteNextHop	
	ipRouteType	
	ipRouteProto	
	ipRouteAge	
	ipRouteMask	
	ipRouteMetric5	
	ipRouteInfo	
	IpNetToMediaIfIndex	
	IpNetToMediaPhysAddress	
	IpNetToMediaNetAddress	
	IpNetToMediaType	
	IpRoutingDiscards	

UDP MIB	TCP MIB	SNMP MIB
UdpInDatagrams	tcpRtoAlgorithm	snmpInPkts
UdpNoPorts	tcpRtoMin	snmpOutPkts
UdpInErrors	tcpRtoMax	snmpInBadVersions
UdpOutDatagrams	tcpMaxConn	snmpInBadCommunityNames
UdpLocalAddress	tcpActiveOpens	snmpInBadCommunityUses
UdpLocalPort	tcpPassiveOpens	snmpInASNParseErrs
	tcpAttempFails	snmpInTooBigs
	tcpEstabResets	snmpInNoSuchNames
Address Translation MIB	tcpCurrEstab	snmpInBadValues
AtIfIndex	tcpInSegs	snmpInReadOnlys
AtPhysAddress	tcpOutSegs	snmpInGenErrs
AtNetAddress	tcpRetransSegs	snmpInTotalReqVars

Address Translation MIB	TCP MIB	SNMP MIB
AtNetAddress	tcpConnState	snmpInTotalSetVars
	tcpConnLocalAddress	snmpInGetRequests
	tcpConnLocalPort	snmpInGetNexts
	tcpConnRemAddress	snmpInSetRequests
	tcpConnRemPort	snmpInGetResponses
	tcpInErrs	snmpInTraps
	tcpOutRsts	snmpOutTooBigs
		snmpOutNoSuchNames
		snmpOutBadValues
		snmpOutGenErrs
		snmpOutGetRequests
		snmpOutGetNexts
		snmpOutSetRequests
		snmpOutGetResponses
		snmpOutTraps
		snmpEnableAuthenTraps

Private MIB File and SNMP Variables

Moxa also provides an SNMP to I/O MIB file that can help you monitor I/O status with SNMP software. You can find the MIB file on the Document and Software CD.

Moxa IO MIB	Moxa IO MIB
totalChannelNumber	DI004-Tigger
serverModel	DI004-CntStart
systemTime	DIO04-LowWidth
firmwareVersion	DIO04-HighWidth
DI000-Index	DIO05-LowWidth
DI000-Type	DIO05-HighWidth
DI000-Mode	DI006-Index
DI000-Status	DI006-Type
DI000-Filter	DI006-Mode
DI000-Tigger	DI006-Status
DI000-CntStart	DI006-Filter
DIO00-LowWidth	DI006-Tigger
DIO00-HighWidth	DI006-CntStart
DI001-Index	DIO06-LowWidth
DI001-Type	DIO06-HighWidth
DI001-Mode	DI007-Index
DI001-Status	DI007-Type
DI001-Filter	DI007-Mode
DI001-Tigger	DI007-Status
DI001-CntStart	DI007-Filter
DIO01-LowWidth	DI007-Tigger
DIO01-HighWidth	DI007-CntStart
DI002-Index	DIO07-LowWidth
DI002-Type	DIO07-HighWidth
DI002-Mode	DI008-Index
DI002-Status	DI008-Type
DI002-Filter	DI008-Mode
DI002-Tigger	DI008-Status
DI002-CntStart	DI008-Filter
DIO02-LowWidth	DI008-Tigger
DIO02-HighWidth	DI008-CntStart
DI003-Index	DIO08-LowWidth
DI003-Type	DIO08-HighWidth
DI003-Mode	DI009-Index
DI003-Status	DI009-Type
DI003-Filter	DI009-Mode
DI003-Tigger	DI009-Status
DI003-CntStart	DI009-Filter
DIO03-LowWidth	DI009-Tigger
DIO03-HighWidth	DI009-CntStart
DI004-Index	DIO09-LowWidth
DI004-Type	DIO09-HighWidth
DI004-Mode	DI010-Index
DI004-Status	DI010-Type
DI004-Filter	DI010-Mode

DI010-Status	
DI010-Filter	
DI010-Tigger	
DI010-CntStart	
DIO10-LowWidth	
DIO10-HighWidth	
DI011-Index	
DI011-Type	
DI011-Mode	
DI011-Status	
DI011-Filter	
DI011-Tigger	
DI011-CntStart	
DIO11-LowWidth	
DIO11-HighWidth	

Moxa IO MIB	**Moxa IO MIB**
AI00-Index	AI02-Index
AI00-Type	AI02-Type
AI00-Range	AI02-Range
AI00-Value	AI02-Value
AI00-Min	AI02-Min
AI00-Max	AI02-Max
AI01-Index	AI03-Index
AI01-Type	AI03-Type
AI01-Range	AI03-Range
AI01-Value	AI03-Value
AI01-Min	AI03-Min
AI01-Max	AI03-Max

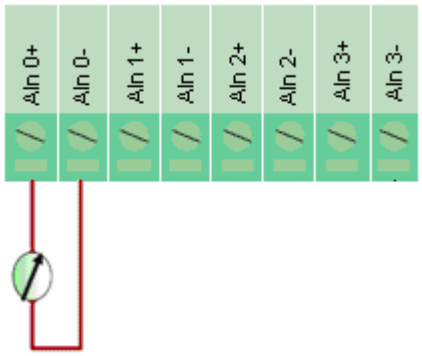
E
Factory Default Settings

The factory default settings for the ioLogik E2242 are as follows:

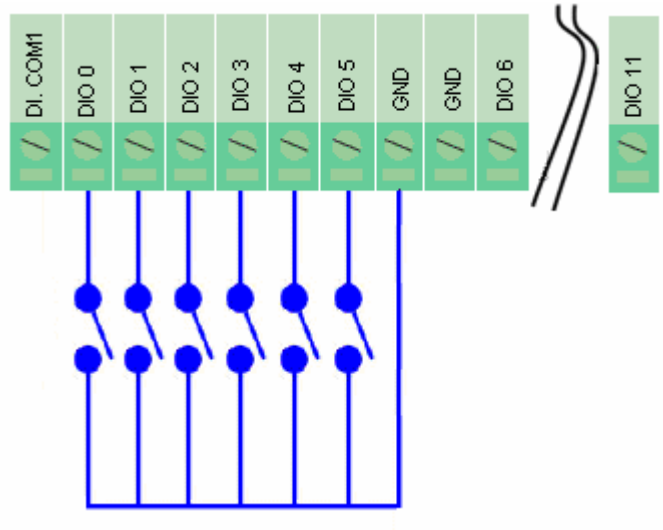
IP address:	192.168.127.254
Netmask:	255.255.255.0
Gateway:	None
Communication Watchdog:	Disable
Modbus/TCP Alive Check:	ON
Modbus/TCP Timeout Interval:	60 sec
DI Mode:	DI0-0 to DIO-5
DI Safe Status:	Off
Filter Time for Counter:	10 × 0.5mS
Counter Trigger Type:	Lo to Hi
Counter Status:	Stop
AI Mode:	AI-0 to AI-3, +/- 10V
DO Mode:	DIO-6 to DIO-11
DO Safe Status:	Off
Pulse Low Width:	1
Pulse Hi Width:	1
No. of Pulses:	0 (continuous)
Filter Time for Counter:	10 × 0.5mS
Counter Trigger Type:	Lo to Hi
Counter Status:	Stop
Counter status:	Stop
Password:	“empty”
Module Name:	“empty”
Module Location:	“empty:
SNMP:	Enable
Community:	Public
Contact:	“empty”
Location:	“empty”

Device Wiring Diagrams

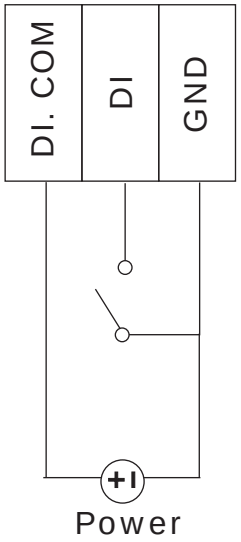
Analog Input



Digital Input Dry Contact



DI Dry Contact

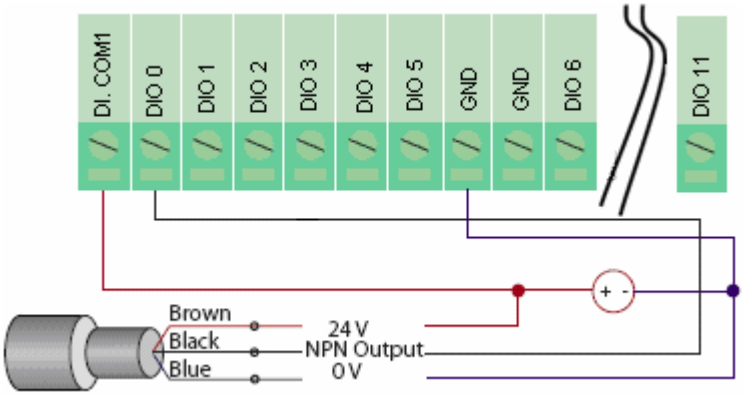


ATTENTION

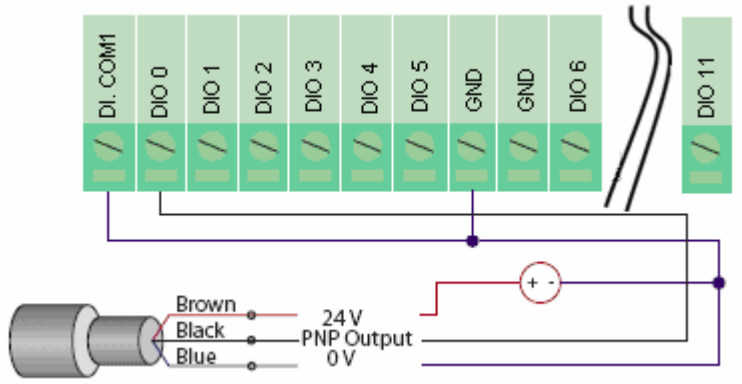
When connecting the I/O device to the ioLogik's dry contacts, we strongly recommended connecting DI.Com to the power of the external sensor to avoid affecting other channels.

Digital Input Wet Contact

NPN Type Sensors Connection



PNP Type Sensors Connection



Digital Output Sink Mode